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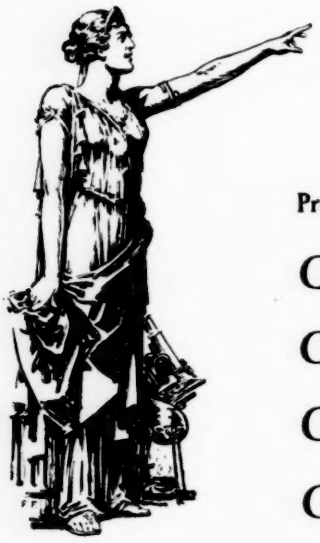

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An Address

[ABRIDGED]

ON THE

DEBT OF MODERN SURGERY TO THE ANCILLARY SCIENCES.

Delivered at the Annual Meeting of the British Medical Association at Manchester on Tuesday, July 23rd

BY ARTHUR HENRY BURGESS, M.B., M.SC. VICT., F.R.C.S. ENG., D.L.,

PRESIDENT OF THE ASSOCIATION; PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF MANCHESTER; HONORARY SURGEON TO THE MANCHESTER ROYAL INFIRMARY.

[AFTER referring to the changes in the medical profession and in the hospital arrangements since the Association's visit to Manchester in 1902, and to the work of the 2nd Western General Hospital during the war, Prof. Burgess discussed the sharp dividing line between the history of surgery before and after the time of Lister. He explained how this extension had been particularly noticeable in the development of abdominal surgery. He gave a local illustration of this development by comparing the operations performed at the Manchester Royal Infirmary at the beginning and at the end of the first quarter of this century. During this period, the proportion of operations on the abdomen had risen from 11 per cent. to 57 per cent., the annual number of operations for acute abdominal conditions from 82 to 1241, while their total mortality had diminished from 36 to 8 per cent. Prof. Burgess continued:—]

This progress in surgery—which, I feel strongly, will compare favourably with that attained in any other branch of the arts and sciences—has not, nor could it have been, achieved without the material assistance of the contemporary advances in the allied sciences; it is, indeed, this which constitutes my main thesis to-night. Modern victories are rarely won single-handed, and the greater the number, the more effective the strength and the more vigorous the activities of the allied forces whence assistance is forthcoming, the more confidently may we look forward to a victorious issue. Prior to the time of John Hunter surgery was almost entirely an art—a glorified handicraft, taught and practised quite independently of all other arts and sciences, devoid of any physiological basis for its methods, and essentially empirical in its attempts at progress. Hunter, deeply imbued with the scientific spirit, introduced into surgery the method of careful observation, collection, and collation of facts, and their thorough testing by direct experimental investigation, rather than that of trusting to theories founded on insufficient and unproved evidence. "Don't think—try" was his favourite exhortation. He it was who first gave allies to surgery, urging that surgery should be regarded as a branch of natural science, to be studied in its appropriate relationship to all the other branches, thus bringing it into close association with chemistry, physics, biology, comparative anatomy, physiology, and pathology. Had the microscope been available in Hunter's day he would doubtless have added to these bacteriology.

Every important discovery in the natural sciences since Hunter's time has exerted its influence upon contemporary surgical thought and practice, and overwhelming indeed would be surgery's debt to its allies were it not offset by a corresponding counter-debt for the help rendered to them in return by the great advances that have been made in surgical knowledge.

Though the choice for consideration to-night of a few only of the numerous component factors of this debt of modern surgery to the ancillary sciences must necessarily prove an arbitrary and rather an invidious task, yet I feel that the concensus of surgical opinion will endorse my selection of physics and of physiology as the two sciences to which, in recent times, surgery is most indebted; and further, that of the many useful applications in surgery of the results of researches in physics three have established a special claim upon our attention—X rays, radium, and light therapy.

THREE APPLICATIONS OF PHYSICS.

1. *Radiology.*

The X rays, discovered by Wilhelm von Röntgen of Würzburg in 1895, were early applied to the diagnosis of pathological states in the human being, and thus was founded the science of radiology, whose subsequent brilliant achievements not only constitute one of the most important chapters of progress in medical affairs during the present century, but also open up vistas of still greater possibilities for the future.

The organs and tissues of the body vary in the degree of resistance they offer to the passage of the X rays, and it is upon the relative opacity of an organ to that of the tissues in its immediate vicinity that the possibility of demonstrating its shadow upon the radiographic plate or screen depends. The bones and teeth are very much more opaque than the soft structures, and cast the deepest shadows; the lungs are the most translucent, so that the heart placed between them is relatively opaque, and casts a very definite pulsating shadow. The kidneys are seen only to a very limited degree, since they are surrounded by tissues of approximately the same density as themselves; were they situated in the thorax their visibility would equal that of the heart.

Foreign bodies are displayable in proportion to their density, those of a metallic nature taking the first place. Had we not had available during the Great War the assistance of the X rays in the detection and accurate localisation of the bullets, shell fragments, and other metallic particles lodged in the tissues of so many of our wounded, war surgery would have had a very much less successful tale to unfold. Calculi are opaque to the X rays proportionately to the amount of lime salts they contain, those of the urinary tract being nowadays displayed with such reliability that operations for the removal of renal and ureteric stones are practically never undertaken unless the presence of the calculus has been previously radiographically demonstrated. In the bladder, it is true, stones are occasionally met with composed of uric acid only and quite translucent ("radiolucent") to the X rays; such may easily be overlooked even if of large size, but fortunately we have, in the cystoscope, a certain means of their recognition. Calculi in the salivary and other glands are readily displayed, while, with improving technique, gall-stones are being shown in a steadily increasing proportion of cases.

The assistance of the X rays in the diagnosis and treatment of fractures and dislocations has proved invaluable, and the advice given recently by the council of the Medical Defence Union in a circular letter to its members, to insist upon radiography in every case of suspected fracture, would appear to be extremely sound from several points of view other than the intended one of defence against a possible legal action for malpraxis. Radiography soon taught us that in a large proportion of what were formerly considered to be merely "sprains" of joints some definite bony injury was present, the overlooking and consequent failure to apply appropriate treatment to which explains the popular idea that a "sprain is worse than a break." Many incomplete and impacted fractures, and some of those without displacement, cannot be detected by any other means than radiography, and of this the general public is becoming aware. The public is, however, much too prone to estimate the success or failure of treatment of a fractured bone by the extent of the anatomical deformity displayed in the

radiogram, rather than by the functional result; to the popular mind the "setting" of a fractured bone seems to imply that the radiographic picture should show the perfect apposition of the broken surface—an ideal which, though frequently most eloquently stressed by counsel for the plaintiff in an action for malpraxis, is, as the medical profession knows only too well, rarely attainable apart from open surgical operation.

X ray apparatus is now so efficient that the finest details of structure of the bones are easily shown, and the slightest changes therein induced by early disease can be readily detected. Thus the earliest manifestations of tubercle, of rickets, of syphilis, and of new growths as they affect bone are readily recognisable, and such knowledge conduces to earlier and more effective treatment. One of the commonest applications of radiography of the present day is that to the sockets of the teeth, and many a local source of origin of "local sepsis," otherwise inexplicable, has been thereby disclosed.

At an early stage of radiography its utility was vastly extended by the introduction of substances opaque to the X rays into parts of the body otherwise radiolucent, thus rendering them visible. The ramifications of sinuses in the soft parts were demonstrated radiographically by previously injecting them with bismuth paste. The introduction of the bismuth, and, later, of the barium meal has been *the* outstanding advance in radiology, and has completely changed many of our former ideas regarding the anatomical position, the form, and the physiological movements of the different parts of the alimentary tract, while it has added in a truly marvellous degree to our knowledge of their pathology. Radiology, to the infinitely greater safety of the patient, has entirely displaced the bougie in the diagnosis of œsophageal obstruction, and yields an accuracy of information as to the exact situation, extent, and nature of the cause of the obstruction previously quite unattainable. It thus differentiates readily between simple cicatricial stricture, malignant stricture, compression of the œsophagus by tumours from without, and the very imperfectly understood muscular obstruction at its lower end, to which the term "cardiospasm" is applied. The presence, situation, size, and shape of pharyngeal and œsophageal diverticula are demonstrated with certainty by means of the opaque meal, which has also taught us that diverticula of the alimentary canal, though most frequently met with in the pelvic colon, may occur also in the rest of the large intestine, in the appendix, the small intestine, the duodenum, and even in the stomach. The recognition of gastric and duodenal ulcers, of their complications, such as hour-glass contraction and pyloric stenosis; of gastric cancer, more particularly in its earlier stages; of obstructions of the intestines, especially that of carcinoma of the colon, by means of the opaque enema, either alone or in combination with the opaque meal; of displacements of the viscera such as are observed in diaphragmatic hernia or in visceroptosis, and the demonstration by Graham's method of the outline of the gall-bladder some 10 to 12 hours after the administration of tetraiodo-phenolphthalein, owing to the power of this viscus to concentrate the bile, in which the drug is excreted, to such a degree as to prove opaque to the X rays—all these constitute veritable triumphs of radiology, and have enormously facilitated the diagnosis of abdominal conditions.

Much the same may be said of the application of the opaque ureteral bougie and of the introduction of opaque media into some part of the genito-urinary tract during radiography—pyelography, ureterography, cystography, or urethrography, according to the portion of the tract concerned. Of these, pyelography has been most employed, and has disclosed alterations in the size, shape, and position of the renal pelvis, calyces, and ureters which have proved of the highest possible value in the diagnosis of renal pathological states.

The introduction into the trachea of the opaque medium lipiodol—a combination of 40 per cent. iodine with oil of poppy seeds—renders the bronchi and their ramifications visible upon a radiogram taken very shortly afterwards, and has been found useful in determining the relation of a foreign body in the lung to the nearest accessible bronchus, in demonstrating the outlines of lung abscesses, the presence and extent of bronchiectasis, the existence of a broncho-pleural fistula, and the extent of malignant growths involving the bronchi. Lipiodol was originally recommended by Sicard of Paris in 1921 for the localisation of the site of blockage of the subarachnoid space by spinal cord tumours. Introduced into the upper part of this space, as by injection into the cisterna magna, the medium falls by gravity to the level of the upper limit of the obstruction, and can there be radiographically shown. By injecting into the lumbar sac an "ascending" mixture of lipiodol and olive oil, of lighter specific gravity than the cerebro-spinal fluid, the lower extent of the subarachnoid block can be defined. The method is not altogether devoid of danger, and lipiodol once introduced, appears to remain unabsorbed for a long period, even for years. The injection of lipiodol into the uterine cavity has been used to indicate its size and shape, and any encroachment upon it as by a growth, while the failure of the medium to pass along one or both Fallopian tubes has been utilised in the diagnosis of their obstruction in cases of sterility.

Another method of altering the relative densities to X rays of adjacent soft structures, and thus rendering their outlines visible, is the introduction of a gaseous medium—air, oxygen, or carbon dioxide—as into the perirenal tissues, thereby allowing the outline of the renal shadow to be readily discerned; or into the peritoneal cavity, when the liver, spleen, and kidneys are rendered visible. The withdrawal by puncture through a drill hole in the skull of a small amount of fluid from one of the lateral ventricles of the brain and its replacement by air or oxygen has allowed the outlines of the ventricles to be rendered visible upon the radiographic plate; their increased size in internal hydrocephalus can thus be readily demonstrated, whilst the position relative to the ventricle of an otherwise obscure cerebral tumour can often be accurately ascertained.

The growing importance of radiology is evidenced by the steadily increasing proportion of patients who pass through the X ray department of our hospitals either for diagnosis or treatment. At the Manchester Royal Infirmary this proportion has gradually risen from 1 in 100 in 1908, to 1 in 24 in 1912, 1 in 11 in 1917, and 1 in 5 in 1928.

2. *Radium*

Radium was discovered in 1898 by Prof. and Madame Curie in a deposit of pitchblende from Joachimstal in Bohemia, and was at first a monopoly of the Austrian Government. This monopoly was transferred to the American Government in 1913 owing to the discovery in Colorado and Utah of carnotite—a mineral which, although the proportion of radium it contained was as small as 1 gramme in 400 tons, nevertheless proved profitable to work owing to the ease with which the radium could be extracted. The finding of some very rich lodes of pitchblende in the Belgian Congo in 1921 has now placed the monopoly in the hands of a Belgian syndicate, who, in their factory at Oolen, at present supply most of the world's demand. It requires from 30 to 40 tons of ore to yield 1 gramme of radium, and its extraction necessitates spacious premises, much labour, and many highly skilled operatives, all these factors being reflected in the present market price of about £12,000 per gramme. This monopoly seems likely to persist for some time, and only the discovery of a new source of really rich deposit can ameliorate the present situation.

Radium emits rays of three varieties—alpha, beta, and gamma—the last, similar to the Rontgen rays, and of high penetrative power, being those mainly used in deep treatment. Upon both animal and vegetable life radium has a decidedly detrimental effect, which is not, however, exercised equally upon all tissue cells, and even upon normal tissues radium has a decidedly selective action. Thus the cells of

glandular structures, especially those of the ovary and testis, are much more susceptible than those of fibrous tissue, while muscle, cartilage, and nerve-cells are the least sensitive. Actively dividing cells are the most vulnerable, and the cells of malignant growths, in which activity of cell division is a prominent feature, are more readily affected by radium than the other cells of the body. Upon this selective action the therapeutic value of radium in cancer depends, and our problem is to determine the exact dose that will exert the maximal destructive effect upon the cells of the malignant growth with the minimal upon those of the other tissues. There is a minimal dose below which no destructive action occurs, and many believe that these weak irradiations can stimulate the growth of tumour cells, and even stir into activity cells actually quiescent. The total dosage of radium, calculated in milligramme hours, can be applied either as a large amount of radium acting for a short time, or a small amount acting for a long time, and opinion is not yet decided upon the optimal dosage for each type of growth. On the one hand, by prolonging the duration of exposure, a greater number of cells will be adversely influenced during the vulnerable stage of active cell division; on the other hand, it has been shown experimentally that repeated sublethal doses may actually increase the resistance of the tumour cell to radium, and radiation treatment should, therefore, be concluded within a reasonably short time, and not indefinitely repeated.

As a therapeutic agent radium has been found of considerable value in non-malignant conditions—such as nævus, keloid, lupus and other skin diseases, exophthalmic goitre, and benign tumours—but it is in the treatment of malignant disease (including rodent ulcer) that its chief interest to us lies. Restricted at first entirely to cases too advanced for radical operative treatment, its scope has within the last few years been extended, either alone or in combination with surgery, to the treatment of operable cases. There has arisen a special branch of surgical technique—"the surgery of access"—concerned with the planning of operative procedures for the appropriate exposure of deeply seated malignant growths in order that radium tubes may be placed in correct relation thereto—as when a rectal carcinoma is exposed by removal of the coccyx and lower portion of the sacrum, an œsophageal carcinoma through the posterior mediastinum after rib resection or across the pleural cavity by lateral thoracotomy, or an intralaryngeal growth through a "window" cut in the thyroid cartilage. Modern methods of radium application have met with such considerable success in cancers of the skin, of the cervix uteri, of the mouth and tongue, and of the larynx, that there is an increasing tendency in these cases to prefer radium to operative treatment, at any rate so far as the primary growth is concerned. The comparatively slight disturbance of radium tube insertion, or of radium bomb treatment, their lesser risks, and the absence of that mutilation necessarily associated with a radical surgical operation, and which, as in the case of the tongue, may prove a considerable and permanent disadvantage, are factors favourable to radium, and should tend to overcome the natural reluctance of the average patient to submit to early treatment. It is, however, upon the end-results that the question must be ultimately decided, and these are not yet sufficiently known in the case of radium for a conclusive judgment, although some promising series of five-year statistics have been reported. In many cases the best results are obtained by a combination of radium treatment with surgery, as when the radical operation for cancer of the breast is associated with the implantation of radium tubes or needles into the supraclavicular and anterior mediastinal regions. At the present moment expert opinion seems to favour reversion to the external application of radium, either alone or in combination with radium tube insertion and very short wave-length X ray irradiation. There are, however, two most important changes from the surface applications as originally practised: (1) the much larger quantities of radium used—up to 4 g., and (2) the much greater distance from the skin—as much as 16 cm.—at which it is applied, thereby ensuring a more uniform dosage to all parts of the area irradiated, with lessening risk of cutaneous damage. This "bomb" or "cannon" treatment—as at present carried out in Paris, Brussels, Stockholm, and on a smaller scale at the Westminster Hospital, London—is considered by many likely to prove the method of choice in radium therapy, and it certainly deserves to be tested very thoroughly, should a sufficiency of radium be forthcoming. The still very high cost of radium in spite of the removal of the one-third *ad valorem* Government duty, and its restricted supply, are matters requiring urgent attention, and every means must be taken not only to increase its production, but also to ensure that the most efficient and most economical use is made of such supply as is already available, having regard to the absolute necessity, in this connexion, of maintaining an intimate association between treatment and research. The technique of radium therapy is highly specialised, and such work should be centralised and restricted to the expert staffs of special institutions established in a few of the largest cities of a country. Until the supply of radium becomes less inadequate to cope with the increasing demand it may be advisable to arrange for a "night" as well as a "day" staff of workers at these institutions in order to minimise the number of hours ("radium-hours") during which any of the radium is unemployed in treatment.

3. *Actinotherapy.*

Heliotherapy—treatment by sunlight—is probably as old as human history. Hippocrates (460 to 370 B.C.), refers to the effect of sunlight in promoting health, and recommends sufferers from various ailments to walk about naked in the sun as much as possible—a simple remedy, which seems, however, to have been overlooked for many subsequent centuries. At the end of the last century a considerable proportion of the beds in the hospital wards of our large cities was occupied with cases of tuberculous disease of the bones, joints, and spine, and other forms of "surgical" tuberculosis, for which operations, often of a very extensive and mutilating nature, and frequently requiring repetition, were considered the only chance of a cure. How frequently they failed, and, even when successful in saving life, the unsightly deformities and fearful defects of function that resulted are some of the unpleasant memories of those of us who practised at that time. No more beneficent change has occurred in any department of treatment than in that of surgical tuberculosis during the past quarter of a century.

Thanks to the pioneer work of Bernhard and Rollier in Switzerland, and of Sir Henry Gauvain and Sir Robert Jones in this country, these mutilating surgical operations are things of the past. Surgical tuberculosis is nowadays treated by a general exposure of the body to sunlight in the open air in summer, and to artificial sunlight in the winter or whenever natural sunlight is not available. This should be combined with local treatment so designed as to ensure complete immobilisation of any active focus, the removal of any pressure or weight-bearing, the correction, so far as is possible, of any existing deformity, and the antiseptic care of any discharging sinuses. Active surgery is limited almost entirely to the evacuation of any cold abscesses that may develop, although in tuberculous spinal disease operations (Albee's, Hibbs's) are occasionally performed, not as a direct attack upon the affected tissues, but to ensure better immobilisation of the morbid focus in the vertebral bodies by producing ankylosis of the spinous processes of the diseased vertebræ and of those immediately above and below. Under this modern plan of campaign not only is victory assured in a much greater proportion of cases, but the bronzed and robust-looking bodies of the patients under sunlight treatment contrast pleasurably with the waxen faces and wasted limbs of the old

days, while the local focus of disease heals with the minimum of deformity and the maximum preservation of function.

Treatment by ultra-violet radiation (actinotherapy) is now being extended to rickets and other general diseases, to most forms of skin disease, and to many disorders of the circulatory, respiratory, alimentary, nervous, and genito-urinary systems, as well as to those of the special senses. It has, in fact, assumed the dimensions of a "boom" treatment, and "sun-ray" centres are being established all over the country, not only as private ventures, often controlled by laymen only, but also at the municipal bathing establishments of many of our cities and towns, while there are sunbaths in many factories and at "pitheads" in several of our coal-mining districts.

The ultra-violet rays are, however, far from being innocuous, and their correct dosage is a matter of great importance and of careful individualisation, since what is a safe dose for one may be dangerous to another. Over-exposure to their influence produces sleeplessness, restlessness, loss of weight, lassitude, and even sickness, while severe burns and serious forms of dermatitis may result in sensitive persons. Moreover, some ailments are adversely influenced by ultra-violet ray treatment—notably chronic nephritis, arteriosclerosis, and quiescent tuberculosis, the last of which may easily be stirred into renewed activity. It is therefore in the public interest that the prescription of ultra-violet rays be restricted to the medical profession, and that their application be undertaken only by those who have received a proper course of training for this special work.

In view of the risks to the public involved in the use of electricity and radiation as methods of treatment by untrained and unqualified persons, the Representative Body of the British Medical Association, at the last annual meeting, expressed the opinion that suitable courses of training should be organised under medical direction for persons wishing to administer this form of treatment; that persons who have satisfactorily followed such a course should be entitled to have their names entered on an approved roll; that they should undertake to treat only patients sent to them by medical men, and that medical men should refer their patients only to those persons whose names are on the approved roll. Along these lines the Society of Apothecaries of London, acting in concert with the British Medical Association, has recently agreed to set up a standard to which persons practising physiotherapeutic treatment should attain, to institute a diploma, and to establish a register of those found qualified to serve as "biophysical assistants," such registration to entitle the appendage of the letters "B.P.A." to their names. The unqualified, unregistered chemist, dentist, and midwife are forbidden by law, and it seems only logical that the unqualified electrotherapist, who handles therapeutic measures equally potential of danger, should be placed under similar legal control.

Physiology: The Essential Foundation of Modern Medicine and Surgery.

Physiology has often been referred to in the past as the handmaiden of medicine, but such a description very inadequately represents its present status as a proud and independent branch of true science—the science of life itself. Rather must it be described as the essential foundation of modern medicine and surgery, as the means by which many of our former purely empirical methods of treatment have been placed upon a rational basis, and as the main factor by which the practice of medicine and surgery is daily becoming proportionately more of a science and less of an art. That the element of art must continue permanently to play a considerable part in surgery is self-evident when we remember how largely handicraft enters into its daily routine, but the merely artistic aspect of surgery has now, we may fairly claim, been brought to so high a degree of perfection that it is not so much upon outstanding advancements in surgical artistry that we must rely for future progress as upon a more thorough understanding of the physiological principles involved in our work, and their application to what is, after all, the great aim of surgery—the restoration of deranged function to the normal. The greater comprehension the surgeon obtains of what constitutes normal function the better equipped is he to achieve this aim, and to improve his methods by means which were not possible in the days when physiology was less advanced. The surgeon and the physiologist must tread the path of progress hand in hand, to the great advantage of each, since the debt between them is essentially a mutual one. For the success of his experiments upon animals the physiologist has to depend largely upon the methods of modern aseptic surgery, and has, therefore, a very vital interest in any improvements in surgical technique that may from time to time accrue. Moreover, though it is true that many discoveries made by physiologists which have found valuable practical application in medicine and surgery have originated purely in the search after truth and without any thought of their possible clinical utility, yet, on the other hand, there are many instances where clinical observation has been the starting point of physiological researches which have ultimately proved of the greatest benefit in the treatment of human disease. One of the most impressive illustrations of this is yielded by the development of our knowledge of the localisation of function in the cortex of the brain.

[Prof. Burgess gave a historical survey of the progress made in the localisation of cerebral function, and in our knowledge of the functions of the thyroid gland.]

New Methods of Study.

The progress of physiology during the present century has been characterised by many new methods of study, by the greater attention devoted to human physiology, and by the enormous strides made in the physiology of nutrition. If we look back to the beginning of this century and compare the state of physiological knowledge then with that of the present day it is wonderful to contemplate the discoveries that have been made. The use of X rays for the examination of the function of the stomach and small intestines, developed first of all by Cannon for physiological purposes, had only just begun to be applied to the diagnosis of alimentary diseases. The rôle of proteins in nutrition was imperfectly understood and their chemical constitution was only a conjecture: Vitamins had not been heard of. Insulin was still a hypothetical substance. None of the active principles of the ductless glands had been synthesised and their mode of action was very incompletely known. Micromethods for the biochemical examination of the blood and other body fluids were practically unknown. The buffering mechanisms of the blood were not dreamt of, and the close interplay between normal physiological functions such as secretion and respiration, and their part in the regulation of body neutrality, was not known. The relation of the capillary circulation to the production of shock is also a relatively recent discovery.

All these advances in knowledge, and many others that might be mentioned, have had their influence on surgery—directly, because they have improved methods of diagnosis and treatment, and indirectly on account of their influence on the attitude of the surgeon to his subject. It is impossible to deal in detail with each particular advancement which surgery owes to physiology, but a few examples may be mentioned.

[Prof. Burgess then outlined the pioneer work of Gowland Hopkins on vitamins, and of E. Mellanby on dietetic deficiencies leading to rickets, and traced the effects in medicine of the discovery of vitamin D in certain foodstuffs, and of its production by irradiation of ergosterol. He spoke of blood transfusion as one of the most useful of our emergency surgical therapeutic measures, which had been reintroduced on a sound physiological basis, when its dangers had been eliminated by the differentiation of the four now well-known blood

groups. Another triumph of physiological research, which was useful to the surgeon as to the physician, was the isolation and standardisation of insulin. No patient was now refused any necessary operation because of diabetes, the mortality of operations upon diabetics had been reduced to that in cases without this complication, and it seemed likely that in the future, with a better knowledge of the part played by insulin in carbohydrate metabolism, it might find other surgical uses.

Prof. Burgess then discussed at greater length the physiology of the kidney as applied to surgical problems:—

Assessment of Renal Function.

It is principally to the painstaking and persevering work of the American biochemist Folin that we owe the modern micro-methods of blood analysis whereby, using only a few cubic centimetres of blood, all the important constituents can be accurately determined. These methods have been particularly helpful in cases where prostatectomy is contemplated and where it is essential to know to what extent the excretory functions of the kidneys have been already adversely affected by back-pressure from the prostatic obstruction, as indicated by the abnormal retention in the blood of urea, uric acid, creatinin, and other waste products to an extent varying directly with the degree of renal derangement. It cannot, in fact, be too strongly stressed that the operative risks of prostatectomy are concerned infinitely more with the condition of the kidneys than of the prostate, and that by delaying the major operation until the renal functions have been improved by the relief from "back-pressure" afforded by adequate preliminary drainage of the bladder—either by the indwelling catheter or by suprapubic cystostomy—the dangers attending the removal of the prostate can be very materially diminished. Biochemists, by means of their tests of renal functional capacity, have enabled surgeons to estimate the power of the kidneys to withstand surgical intervention with a degree of accuracy that is truly remarkable. Would that the same could be said of the liver, and that we could "size-up" the functional state of that organ as simply and as correctly as we can that of the kidneys. So manifold and varied, however, are the functions of the liver, and so diverse the directions in which deranged hepatic function may become clinically manifest, that any reliable estimation thereof must necessarily involve more extensive and more complicated procedures than in the case of the kidneys.

Of other methods of applied physiology to which the surgeon is indebted, mention may be made of the use of fractional gastric analysis for investigation of the activity, both digestive and motor, of the stomach; the duodenal tube for the collection and examination of bile; estimation of the basal metabolism as a guide to over- and under-activity of the thyroid and pituitary glands, and to the nature of the operative procedures to be undertaken in connexion therewith; determination of the carbon dioxide combining power of the blood and its relation to the diagnosis of those conditions of acidosis and alkalosis that occasionally complicate surgical procedures; and the examination of the red blood corpuscles for "fragility" in cases of splenic enlargement, as in haemolytic jaundice.

In the past a large proportion of the discoveries of physiology has been the outcome of experiments upon animals, conducted in physiological laboratories, while the wide field for the investigation of its problems offered by the hospital wards and operating theatres has been comparatively little utilised. For the elucidation of many points man himself possesses many advantages over the lower animals as a subject of investigation, and a more active encouragement of clinical research in human physiology is one of the prominent needs of to-day. In Manchester the University professor of physiology has been placed along with his colleagues in anatomy, physics, and pharmacology, upon the consulting staff of the Royal Infirmary, so that the closest possible connexion is maintained between these ancillary sciences and the clinical aspects of medicine and surgery.

Application to the Human Machine.

Pregnant with promise, too, is the recent extension of physiological research to the whole field of human activity. Laboratory investigations have taught us much of the physical and chemical workings of the individual systems of the human body, and have supplied us with various measures by which these can be tested. But of the workings of the human machine as a whole under the varying conditions and stresses of industrial and other forms of activity comparatively little was known. Early in the war it was recognised that the methods of medical examination of recruits then in vogue were far from satisfactory, and their inefficiency was frequently shown up on the parade ground and in the training camps. Especially was this so in the case of individuals in the Royal Air Force, where it was soon recognised that perfectly "sound" men, in the usually accepted medical sense, might nevertheless be quite unfitted to control an aeroplane. New and more delicate tests were required of the functional activity of the various systems, especially the visual, circulatory, and nervous systems, and of their quickness of response to the constantly changing conditions met with in flying. The medical officers of the Royal Air Force have shown most praiseworthy ingenuity in devising methods for the more efficient testing of the body functions, and have given a great impetus to the study of the healthy human machine at work under conditions hitherto unknown. In the field of industry it is becoming more generally recognised that the test of health is the capacity to perform effective work, and researches are constantly being made into the effects of environmental factors—for example, fatigue, monotony, noise, high illumination—upon the productive efficiency of the industrial worker. It has been shown that the distribution of industrial accidents amongst workers exposed to similar conditions of risk is not a mere matter of chance, but that each has an individual proneness to accident which can be fairly exactly estimated by testing the rapidity and accuracy with which he reacts to certain visual, auditory, and tactile stimuli. Though much still remains to be accomplished, the valuable information thus acquired has already brought about vast improvements in working conditions in many of our industries, and in the standard of health and the productive capacity of those employed therein.

OTHER ANCILLARY SCIENCES.

Of modern surgery's debt to the other ancillary sciences that to bacteriology is assuredly the most fundamental, since it was Pasteur's discovery that fermentation and putrefaction were caused by minute living organisms and were, therefore, vital and not merely chemical processes, as hitherto believed, that led Lister to his great conception of the antiseptic treatment of that putrefaction then found in almost all wounds—a conception which constitutes, as we have seen, the very starting-point of modern surgery. Time permits me merely to mention other advances in bacteriology: the detection of the causative germs of almost all the infective diseases; the elucidation of the great principles of immunity, both "active" and "passive"; the preparation of vaccines and of antitoxic serums and their use in the prevention and treatment of bacterial infections; the therapy of systemic infections by the intravenous introduction of chemical antiseptics resulting, among other notable gains, in that brilliant conquest of the former scourge of syphilis that has been achieved within the present century—all of which constitute milestones along the highway of bacteriology's triumphal progress.

Nor have I time to refer to the great help that modern surgery has received from research workers in anatomy, pathology, and pharmacology, valuable as their contributions have been; nor yet to more general sources of assistance such as the greatly improved means of rapid intercommunication (the

telephone, the wireless) and of rapid transport (the motor-car, the aeroplane), factors which have so materially facilitated the prompt application of surgical relief in cases of emergency, whether on land or at sea.

I trust, however, that enough has been said to indicate that modern surgery, with the aid of its allies, has made, and is still making, great progress towards that end we all so fervently desire—the prevention of those abnormal conditions, the late results of which to-day necessitate so much surgical attention of a destructive rather than a constructive character. Much yet remains to be done, and the natural sciences must continue to advance, each ready to assist and to accept assistance from its fellows, each along its own special path yet all in mutual friendly alliance working for the common good, all in zealous pursuit of that goal, unattainable though it must ever remain, that will-o'-the-wisp of perfect knowledge and complete understanding. In so doing they will but follow the precept and the spirit of that motto upon the crest of our beloved University, in whose venerable precincts this great Association will to-morrow enter upon its full scientific programme, and of which we in this city are all so intensely proud; "Arduus ad solem"—"leaping upwards to the sunshine"—"ever striving towards the very highest."

ON THE

Clinical Classification

OF

CONGENITAL CARDIAC DISEASE.*

By MAUDE E. ABBOTT, M.D. McGILL.,

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CLINICIANS do not always recognise the fact that congenital cardiac disease does not necessarily mean "blue baby" or *morbus cæruleus*, with its familiar symptom-complex of cyanosis, dyspnœa, and clubbing, and its progressively downward course. This condition gives little scope for the physician's skill, since the deficient oxygenation of the blood thus revealed is the result of unalterable structural changes in the heart. On the other hand, there exists a larger and clinically a much more important group of congenital cardiac patients to whom the word "acyanotic" applies, for the reason that these patients do not, under otherwise normal conditions in the body, present any raised oxygen-unsaturation at all, so that they show either no cyanosis, or cyanosis only as a transient or very "late" phenomenon. In this group are included those congenital lesions in which *no abnormal communication* between the two circulations exists, so that venous blood does not enter the arterial stream as a result of the anomaly—e.g., coarctation of the aorta—and also the localised cardiovascular septal defects, in which, in the absence of complications and under the physiological conditions of relatively higher pressure in the systemic circulation, blood passes from left to right through the defect. In these cases an *arterial-venous shunt* exists, which may, in the event of a pathological rise of pressure in the right chambers, be temporarily converted into a venous-arterial shunt, with the appearance of *transient* or *terminal* cyanosis.

ACYANOTIC CASES.

These so-called "acyanotic" cases are of great importance to the clinician, for such patients have a relatively good expectation of life, and may live to an advanced age without showing any sign of being hampered by their anomaly. On the other hand, the defect is almost always the seat of strain, and this renders these subjects peculiarly liable to serious complications, especially infective endocarditis or endarteritis usually of the subacute bacterial form, which commonly involves the margins or neighbourhood of the defect, and usually has a lethal termination; or, in another set of cases, the wall of the aorta may undergo spontaneous rupture, either from a concomitant congenital thinning of its coats, or from increased intra-arterial tension; or the myocardium itself may fail, leading to cardiac insufficiency or to the conversion of an arterial venous into a venous-arterial shunt. The fact that these acyanotic congenital lesions do present a fairly good prognosis in the absence of the grave complications which threaten them, makes their early recognition and the rigid preventive care of such patients imperative. The American Heart Association classifies patients with healed rheumatic lesions as "potential cardiacs," and prescribes for these the removal of foci of infection, proper rest, and careful supervision with a view to the avoidance of undue strain, and the elimination of unnecessary risks. It is surely desirable that acyanotic congenital cardiacs should be similarly classified, and as carefully safeguarded and watched.

DIAGNOSIS.

A congenital cardiac lesion of the acyanotic group may usually be "picked up" by detecting, in an otherwise apparently normal individual, the presence of pulsation murmur or thrill of unusual localisation and character in the cardiovascular area. Incidentally, these people often display the slender habitus characteristic of the hypoplasia of the aorta often associated with this congenital lesion. With the help of X rays a further differential diagnosis can often be made between such classic conditions as coarctation of the aorta, subaortic stenosis, and the various forms of cardiovascular septal defects (patent ductus, maladie de Roger, and so forth). In infants under one year, however, practically no differentiation into "cyanotic" or "acyanotic" types can be made with certainty because, excepting the most complex cases of extreme morbus cæruleus, cyanosis often does not manifest itself until after many months of postnatal life. So that one must here be content as a rule with the mere recognition of the presence of a congenital lesion, until sufficient time has elapsed after birth for the manifestation of cyanosis after the "threshold-value" of raised oxygen-unsaturation is reached.

THE CYANOTIC GROUP.

A word may be added regarding the diagnosis of the cyanotic group, though this is of much less practical importance. Once infancy is past, these subjects are readily recognised by their very striking symptomatology, especially the cyanotic hue, which deepens on exercise; and when to these appearances are added atypical physical signs over the cardiac area the presence of a morbus cæruleus is readily established. Differentiation of the exact lesion present in such a cyanotic case can scarcely be determined with certainty, but only a few combinations survive into adult life (see classification below), and of these that most commonly met with in cyanotic patients reaching early adult life is the "tetralogy of Fallot" (pulmonary stenosis, with associated ventricular septal defect and dextroposition of the aorta). These conditions exist in at least 75 per cent. of cyanotic young adults with congenital lesions. In cyanotic patients living beyond middle life one may suspect complete defect of the interventricular septum (cortriloculare biatriatrium) or pulmonary stenosis with closed interventricular septum, since statistics show that the average duration of life in these cases is relatively long.

CLINICAL CLASSIFICATION.

Under the classification set out below, which I have elaborated in the section on Congenital Cardiac Disease in the third edition of Osler and Macrae's

* Abridged from an address delivered at the New Sussex Hospital, Brighton, on July 20th, 1929.

"Modern Medicine" (London, 1927), the principal cardiac anomalies are grouped in the order of their clinical importance.

A. OF CLINICAL SIGNIFICANCE.

I. *Non-cyanotic Group.*

1. Cases in which no abnormal communication exists, but in which the defect may produce a *mechanical interference* with the circulation which become the seat of strain. These are: pericardial defect; ectopia cordis abdominalis; primary congenital hypertrophy; congenital heart-block; anomalous septa; pulmonary and tricuspid insufficiency; aortic and mitral stenosis; anomalies of semilunar and auriculo-ventricular cusps; coarctation and hypoplasia of the aorta; anomalies of the aortic arch; anomalies of coronary arteries; congenital arteriovenous aneurysm; certain anomalies of veins and anomalies of pulmonary artery.

2. Cases of *arterial-venous shunt* with possible terminal or transient reversal of flow (*cyanose tardive*): (*a*) Defects of the interauricular septum (persistent ostium primum; persistent ostium secundum; patent foramen ovale; multiple defects; complete defect (cor-biventriculare triloculare). (*b*) Localised defects at the base of the interventricular septum (*Maladie de Roger;* defects below; multiple). (*c*) Patent ductus arteriosus and localised defects of aortic septum (communication just above the aortic valve; congenital aneurysm of the right aortic sinus of Valsalva).

II. *Cyanotic Group.* (*Morbus cæruleus.*)

1. Cases of *venous-arterial shunt* (arranged in order of severity of shunt). (*a*) *Moderate cyanosis:* Dextroposition of aorta with defect at base of ventricular septum; complete absence of ventricular septum (cor biatriatrium triloculare); pulmonary stenosis of inflammatory type with closed ventricular septum and patent foramen ovale; tricuspid atresia with interauricular septal defect and transposition of the great trunks. (*b*) *Marked cyanosis:* Pulmonary stenosis with dextroposition of aorta and interventricular septal defect (tetralogy of Fallot); pulmonary atresia with ventricular septal defect, dextroposition of the aorta, and patent ductus; transposition of arterial trunks with ventricular septal defects and dextroposition of the aorta. (*c*) *Extreme cyanosis:* Complete absence of cardiac septa (cor biloculare); complete defect of aortic septum (persistent truncus); transposition of arterial trunks with patent foramen ovale and patent ductus but closed interventricular septum: pulmonary atresia with closed ventricular septum, patent foramen ovale and patent ductus; aortic and mitral atresia with defect of interventricular septum and aplasia of aorta.

2. *Cases of Raised Peripheral Pressure. Right-sided valvular lesions* with closed septa (pulmonary and tricuspid stenosis).

B. CASES OF NO CLINICAL SIGNIFICANCE.

Diverticulum of pericardium; bifid apex of heart; diverticulum of heart; acardia, ectopia cordis pectoralis (non-viable); congenital rhabdomyoma; true (mirror-picture) dextrocardia.

[Dr. Abbott demonstrated with an epidiascope diagrams illustrating the course of the circulation in the different defects, and photographs of the corresponding pathological specimens.]

THE BACTERIOLOGICAL DIAGNOSIS OF WHOOPING-COUGH.

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AND

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SINCE the original work of Bordet and Gengou (1906), in which they demonstrated the existence of a bacillus morphologically similar to, but distinct from the influenza bacillus, in the sputum of patients suffering from whooping-cough, there has been very little attempt, except in Denmark, to make a practical application of these findings. The medical profession has not resorted to the bacteriological diagnosis of doubtful whooping-cough. The reasons for this may be that a certain scepticism still prevails about the ætiological connexion of the bacillus which these observers described with this disease and that it has not been realised that the differentiation of this bacillus from the influenza bacillus is easily made.

Observations such as those of Wollstein (1909) and Scheller (1912), who found difficulty in repeating Bordet's serological observations in the disease, have probably contributed to this scepticism, and many of the statements in the text-books and elsewhere leave the impression that the differentiation between *B. influenzæ* and *B. pertussis* rests on some relatively fine points—e.g., Andrewes (1920), in discussing the influenza group of bacteria, says, "Many bacteriologists would agree that we may be confounding under the common term, *B. influenzæ*, a number of closely related species. Bordet's 'whooping-cough bacillus' would fall into such a group."

It is one of the purposes of this paper to emphasise afresh the facts already indicated by Bordet and more recently stressed by Kristensen (1922) that although these bacilli are probably related species there is little ground beyond that of microscopic morphology for confusing them. In the examination of the thick whitish exudate expectorated in the early stages of the disease, Bordet and Gengou demonstrated the presence of a small Gram-negative ovoid microbe, constant in size and appearance (1906). The medium used for successful cultivation was blood-agar with a basis of glycerinated extract of potato (1907). Even on this special medium their organism grew remarkably slowly, two–three days elapsing before the colonies appeared. In the examination of specimens of sputum from patients who had been affected with whooping-cough for some time, Bordet and Gengou found in almost every case and apart from the *B. pertussis*, an organism identical with or very similar to the bacillus found by Pfeiffer in cases of influenza. It was, however, smaller than *B. pertussis* and it showed a marked tendency to pleomorphism and to the development of involution forms. Bordet and Gengou also showed that this organism was met quite frequently in other respiratory affections besides whooping-cough. In a series of papers published subsequently Bordet elaborated and confirmed his original observations with Gengou on the morphological and cultural characters of the *B. pertussis* found by them in early cases of whooping-cough (1907, 1908, 1909 and 1912).

Kristensen (1922) has drawn attention to two additional points of contrast between these bacilli: (1) the capacity of *B. pertussis* to survive for considerable periods on suitable media at low temperature, a character lacking in *B. influenzæ* in his observations, and (2), more important still, the inability of *B. pertussis* to grow freely on the media best adapted for the growth of *B. influenzæ*, such as Levinthal's, "chocolate agar," &c. Convinced by these and other points of the ease with which *B. pertussis* can be differentiated from *B. influenzæ*, the staff of the Danish State Serum Institute has been carrying on the bacteriological diagnosis of whooping-cough for several years for the benefit of general practitioners and others.

So far as we are aware no attempt has been made to corroborate or reject Bordet and Gengou's findings in this country. At all events, we have been unable to find any record of it. It is not clear from the published records whether Freeman's work relates entirely to observations made with cultures obtained from Bordet or refers also to strains isolated by himself (1909). In view of this state of affairs it seemed desirable to find how far the results obtained in Belgium and Denmark could be corroborated in this country; and in case they should be, to control the observations by determining the frequency with which this bacillus could be detected in the trachea and bronchi of children dying from various causes other than whooping-cough. The last type of observations does not appear to have been made

and has obviously an important bearing on the significance of the detection of the organism in cases of the disease.

Technique of Culture.

The medium of culture used for the isolation of the organism was the one in use at Copenhagen slightly modified.

500 g. of sliced potato were boiled down in one litre of water with 40 c.cm. glycerine. The mass was filtered through a sieve, then through lint. To one part of the liquid thus obtained, three parts 0·6 per cent. sodium chloride solution were added. The mixture was rendered slightly alkaline (pH 7·5), 4 per cent. agar was then added, and the whole was then sterilised in the autoclave and tubed off in 7 c.cm. portions.

In preparing plates the tubes containing the potato-glycerine-agar extract were liquefied and allowed to stand in a water-bath at a temperature of 50° C., 3–5 c.cm. of sterile defibrinated rabbits' blood previously warmed in a water-bath to a temperature of 40° C. were then added to each, and the mixture poured into a sterile Petri dish and allowed to cool. Before pouring, the tube containing the blood and agar mixture was gently rotated by hand to bring about a thorough admixture of the contents, with the result that the plates appeared smooth, uniform, and of a bright red colour.

Method of Obtaining Sputum.—A sterile Petri dish in a suitable box was left overnight at the house of the patient and kept in a cold place till ready for use. The specimen of sputum was obtained early in the morning, so as to prevent any possible mixture of sputum with vomited food material. At the end of a paroxysm of coughing the child expectorated into the dish, which was again returned to the cold place until called for. Great emphasis was made on obtaining, if possible, thick, tenacious sputum expelled at the end of a paroxysm of coughing. On the average there was a period of two hours between the collecting of sputum at the house of the patient and its removal to the laboratory and inoculation on Bordet-Gengou medium.

Method of Making Cultures.—A portion of the thickest part of the expectoration was emulsified in 2–3 c.cm. sterile saline, and a very light inoculation of this was made by means of a platinum loop on to the Bordet-Gengou medium and spread over the whole surface by a slender glass rod, the terminal portion of which was bent at a right angle. Another portion of sputum was spread over the surface of a second plate without the preliminary dilution in saline. These two plates were then incubated at 37° C. and examined at the end of 24, 48, and 72 hours.

Bacteriological Findings.

After 72 hours' incubation small, raised, pearl-like colonies made their appearance. These colonies were so characteristic that it was possible when they were numerous to conclude from examination of the plate with a lens alone whether the Bordet-Gengou bacillus was present or not. Microscopic examination of these colonies showed small, ovoid, Gram-negative bacilli uniform in size and subcultures made on "chocolate agar" and Bordet's medium respectively fully confirmed Kristensen's observations. The *B. pertussis* when recently isolated gave little or no growth on "chocolate agar"—a medium particularly well adapted to the growth of *B. influenzæ*.

Kristensen's other differential point between the two organisms was not so clearly confirmed, for although it was found that *B. pertussis* after a preliminary incubation of three days remained alive at least four or five weeks in the ice-chest at 4° C., the behaviour of *B. influenzæ* strains was variable. Some certainly died much more rapidly; but three strains isolated during the 1929 Leeds epidemic were peculiarly resistant, although they did not survive as long as the *B. pertussis*.

A further differential point which has been observed independently in Japan is that the *B. pertussis* is one of the bacteria which give an exceptionally active catalase effect, whereas *B. influenzæ* gives a weak catalase effect.

The Japanese worker, Nishibe (1926), maintains that *B. pertussis* is further distinguished from *B. influenzæ* by giving an oxidase reaction with a dimethyl *p*-phenylene diamine and α-naphthol reagent. Ellingworth, McLeod and Gordon (1929), however, using tetramethyl *p*-phenylene diamine, which is more sensitive to oxidation than the dimethyl compound, observed that both *B. pertussis* and *B. influenzæ* oxidised this compound, although the former was more vigorous in its action.

All these facts go to prove that the bacillus of Bordet and Gengou must be recognised as a well-defined bacterial species distinct from the *B. influenzæ*.

Description of Cases.

The sputum from 17 patients suffering from whooping-cough was investigated and the Bordet-Gengou bacillus was successfully isolated in ten cases (see Table). With one exception, J. D., they were obtained from private medical practice. With the exception of patient H. P., the sputum was obtained in the post-catarrhal stage of the disease. In general medical practice it is very difficult to obtain early cases because treatment is usually sought when the characteristic paroxyms are already present. In Denmark, however, as the result of the establishment of a diagnostic station connected with the State Serum Institute at Copenhagen, the culture medium is sent out in aluminium Petri dishes on the demand of medical practitioners. In this way it is possible to examine a large number of specimens of sputum from patients affected with whooping-cough in all stages of the disease and also from suspected cases.

Table giving Summary of Results.

Patient	Sex and age.	Stage of whooping-cough.	Isolation of bacillus.	Patient.	Sex and age.	Stage of whooping-cough.	Isolation of bacillus.
B. D.	F. 4 y.	2nd wk.	P.	D. M. D.	F. 7 m.	Catarrhal	P.
C. F.	F. 4½ y.	2nd ,,	A.	J. C.	M. 1½ y.	2nd wk.	P.
I. R.	F. 3½ y.	3rd ,,	A.	C. B.	M. 2 y.	3rd ,,	A.
D. A.	F. 4 y.	3rd. ,,	P.	H. P.	M. 5 m.	1st. ,,	P.
A. P.	F. 4 y.	2nd ,,	P.	J. D.	M. 4 y.	1st ,,	P.
F. S.	F. 4 y.	2nd ,,	A.	E. C.	F. 9 m.	2nd ,,	P.
T. W.	F. 3 y.	5th ,,	A.	A. C.	F. 5 m.	2nd ,,	P.
F. T.	M. 5 m.	Contact	A.	L. D.	M. 4 y.	3rd ,,	A.
I. W.	F. 7 m.	1st ,,	P.				

y. = years; m. = months. P. = present. A. = absent.

A second small series of cases examined two years later gave the following results:—

Two cases examined in the week in which the whoop developed—both positive.

Two cases examined in the third week of the disease—both negative.

Two suspected cases which had not developed a whoop—one negative and one positive.

Post-mortem Observations.

Fifty children under 10 years of age dying from various causes were examined post mortem to determine the incidence, if any, of the Bordet-Gengou bacillus in the upper respiratory tract.

A similar technique was adopted throughout. The larynx, trachea, and lungs were removed intact. Surface sterilisation of each part was effected by means of a heated spatula. A sterile pipette was introduced below the surface and then the point pushed out laterally beyond the heated area; the material thus obtained was inoculated on to a "chocolate agar" plate and a plate of Bordet-Gengou medium, one plate of each medium being used for each part of the respiratory tract examined. The "chocolate agar" plates were examined at the end of 24–48 hours' incubation at 37° C. and the Bordet-Gengou plates at the end of 72 hours' incubation at 37° C. Any colonies of Gram-negative bacilli appearing on the "chocolate agar" plates were subcultured on to "chocolate agar" and ordinary agar and incubated for a further 24 hours. Gram-negative bacilli which grew freely on "chocolate" and failed to grown on ordinary agar were accepted as *B. influenzæ*. The result of these post-mortem investigations brought out the following facts: Percentage incidence of *B. pertussis* was nil, and that of *B. influenzæ* was 26 per cent.

Discussion.

These observations very definitely support the contention of Bordet and Gengou that the bacillus which they described is the cause of whooping-cough. The practical question whether the institution of a bacteriological diagnosis of whooping-cough would be of real value to the community should, in our opinion, be answered in the affirmative. For it seems to us that good use could be made of bacteriological diagnosis in the case of patients clinically doubtful, who might be a serious source of contagion—e.g., school-children. The slowness with which the colonies develop and therefore with which the results are available is a drawback, but it is possible that a method of overcoming this will be found.

Summary and Conclusions.

(1) The Bordet-Gengou bacillus was successfully isolated in 12 out of 21 cases of whooping-cough and in all of five cases examined within the first week of the disease.

(2) The organism required for its successful growth a Bordet-Gengou medium freshly prepared and on this medium after three days' incubation gave a highly characteristic small pearl-like colony. Microscopic examination of such colonies showed small, ovoid Gram-negative bacilli, uniform in size.

(3) The bacillus of Bordet and Gengou and *B. influenzæ* are two quite distinct bacterial species. The characters which distinguish them are the following:—

(1) *B. influenzæ* grows quickly, *B. pertussis* grows slowly.

(2) The appearances of the colonies on Bordet-Gengou medium are quite distinct; those of the *B. pertussis* being unlike those of any other bacterium that is commonly found in the sputum and therefore the bacteriological diagnosis can frequently be made by inspection of the plates alone.

(3) *B. pertussis* can be preserved without subculture for periods of four to five weeks at least at temperatures of 10°–0° C.; whereas many strains of *B. influenzæ* are not easily kept without subculture for more than a fortnight under any conditions.

(4) The media most suitable for growth of *B. influenzæ*—heated blood agar, &c.—are quite unsuitable for the growth of recently isolated strains of *B. pertussis*.

(5) *B. pertussis* gives a very active catalase effect, *B. influenzæ* only gives a slight one.

(4) Secretions taken from the larynx, trachea, bronchi, and lungs of 50 children under 10 years of age dying from diseases other than whooping-cough and cultured on Bordet-Gengou media were not found to contain *B. pertussis*, although *B. influenzæ* was quite often detected in them.

(5) The bacteriological diagnosis of whooping-cough if generally adopted would probably be found to be easier and more exact than that of diphtheria and could be of practical service to the community.

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THE MANAGEMENT OF THE PSYCHOSES OF MIDDLE LIFE.*

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IT has been recognised for many years by those in mental hospital practice that mental symptoms of a severe type frequently make their appearance in persons between the ages of 40 and 60 years. Recently however, with the growth of out-patient clinics for psychiatric cases, it has become clear that minor degrees of mental disturbance at this time of life may exist for many months before the patient is committed to a mental hospital, and that there were previously many such cases which never came under the care of psychiatrists at all. These cases appear to be a source of continued anxiety and distress to the relatives and the family physician, and their management is therefore of general interest.

It is the object of this contribution to indicate the methods of clinical approach to such cases as a whole, and to formulate criteria on which prognosis and management may be based. The title of this paper may have suggested the concept of a condition designated "involutional melancholia," and associated in some way with the menopause. Such a concept is misleading, for two reasons: in the first place, it is not in accordance with observed clinical fact. In many cases, the mental breakdown is separated from the menopause by a number of years on either side; and, furthermore, the symptoms of so-called involutional melancholia are often observed in men at the prime of life. In the second place, the name involutional melancholia implies the existence of a fixed symptomatology resultant upon some underlying fixed disease entity. The truth is that there are many clinical types of psychosis which may develop in the middle period of life. Some of them are associated with gross organic disease, some with functional physical changes, while in some it is not possible to demonstrate any physical change at all. The precipitating cause of a psychosis at this period of life may be one of many. It may be organic disease of the brain, or of the somatic field; it may be some environmental disaster, such as financial ruin; or it may be some inner difficulty of the patient's, about which he is unwilling to talk, or of which, even, he may be unaware, because such difficulties may have their true core in the subconscious.

The precipitating cause has but little effect on the symptomatology, for the symptoms are coloured and conditioned by the personality of the individual himself. This is concisely expressed by saying that when an individual breaks down mentally, he does so along the lines of his personality. The psychosis is, as it were, the distorted reflection of the individual as he was before he became ill. For this reason, the family physician can be of great help to the psychiatrist, and has, if he chooses to use it, a strong weapon of defence and prophylaxis against the psychoses. He knows the personalities of his patients. The psychiatrist knows what types of personality are liable to develop psychoses, and, further, of what nature these psychoses are likely to be.

Types of Psychoses Depend on Personality.

I will not dwell on personality descriptions, for their name is legion; but we may, I think, take two figures from literature for purposes of illustration. On the one hand, Cassius, with his lean and hungry look, and his propensity for thinking too much, typifies a personality which is prone to develop the malignant type of psychosis. At the other end of the scale is the fat, boisterous, jovial Falstaff, in whom a psychosis—if it occurred—would most probably be of the benign type. Between these extremes are

* A paper read before the Cardiff Medical Society, Jan. 8th, 1929.

infinite gradations; and it has been demonstrated clinically that the likelihood of recovery or otherwise corresponds closely to the position of the patient in the scale. Any attempt, therefore, to draw a composite clinical picture of the mental disorders of this period of life is unsatisfactory, because of their very nature. Clinical psychiatry is essentially the study of the individual patient. Psychotic symptoms, when they occur, are as variegated as the patients themselves; and this is true even of general paralysis. No disease is more protean in its early manifestations. Sometimes it is the patient, sometimes the relatives who seek advice; perhaps more commonly the latter. When this is so, there is a regrettable tendency on their part to embroil the medical man in some undignified subterfuge. One has heard, for example, of a psychiatrist being asked to call at the patient's house in the guise of the man who comes to wind the clocks. Cases are not unknown where the medical man has condoned such methods, by inviting the patient to come for a drive in his car and then depositing him within the precincts of a mental hospital, the true nature of which is not revealed. Such methods cannot be too strongly condemned; there is absolutely nothing to gain by them. Patients do not readily forget such deceitful practices, and they regard as an enemy not only their own physician, but possibly the profession as a whole, and thereby increase the difficulties of the case.

Examination of the Patient.

From every point of view it is desirable that the medical man should be open and frank. Let him tell the patient that his relatives believe him to be ill, and that he has come, in the capacity of a physician, to examine him. If the patient is truly psychotic, nothing that he may do will hide his symptoms from one trained to elucidate them; while, if he is not psychotic, there is no harm done.

A routine physical examination is, of course, essential; but it is generally desirable, if the case is not obviously one of gross physical illness, to make the mental examination first. There is only one satisfactory way to do this. It is to write down what the patient actually says and does, and the setting in which he says and does it. These are matters of fact, anything else is a matter of opinion. To say that a person is deluded, hallucinated, confused or irrational is merely to express the opinion of the examiner; but, if one writes down, for example, the question, "Do you seem to hear voices?" and the reply, "Yes, like electricity in the head"; or the question, "What year is this?" and the reply, "1899," when it is actually 1929, then one has a permanent record of fact, which may become incontrovertible documentary evidence should legal complications arise later.

The special fields we want to investigate in the mental examination are three in number: (1) The emotional state or mood of the patient. (2) What the patient is thinking about; that is, the content of thought or mental trend. (3) The state of his purely intellectual functions. By "intellectual functions" one means memory, ability to retain simple facts, ability to do calculations, and to orientate one's self in time and place.

1. *The mood.*—The indications of the state of the mood are the patient's facial expression, gesture and attitude, and his statement of how his feelings and spirits are. A psychosis may manifest itself in three ways in this field. They are as follows:—

(*a*) By exaggeration of the emotional state, with or without apparent cause. For example, a patient becoming profoundly depressed after some trivial financial loss, or for no apparent reason at all.

(*b*) By the presence of apathy or a mood which is not in harmony with the patient's thoughts. The commonest example of this is where the patient states that he is being annoyed or interfered with in some way and yet does not, in spite of superficial protestations, show any real resentment thereto.

(*c*) By instability of the mood—where, in the course of a few minutes, the patient will laugh or weep without apparent cause, and will change from laughter to tears very quickly.

The state of the patient's mood gives us some clue to the questions we should ask in the investigation of the next field, viz.:—

2. *The content of thought.*—For example: "Why are you unhappy?" "What do you think is the cause of your depression?" "What are you afraid of?" When investigating the content of thought, we must find out whether the patient's experiences are real or imaginary, and whether his personal beliefs are generally accepted as correct or erroneous. In other words, are his thoughts made up in part of hallucinations and delusions? This often involves the use of leading questions.

3. *Investigation of the intellectual functions of memory, orientation and reasoning.*—The proper mode of approach is to ask the patient about chronological events in his life, beginning with the time he left school following it through such events as employment, marriage, children, deaths of parents, &c., and public events, such as the war and the general strike. Make him give as many dates as possible; and when he tries to gloss over some period, go over it in particular detail, afterwards comparing notes with the relatives. In this way, instances of amnesia or confabulation become apparent. Be particularly on the look-out for incongruities, instanced by a patient who said she was employed as a nurse in 1921, and after that went to make munitions.

Orientation is simply tested by asking the patient if his head feels clear, if he knows the date, where he is, and identifies those about him correctly.

Reasoning is most readily determined by asking the patient to do a few simple calculations.

Having completed the mental examination in this way, we find in a psychotic case that, although there may be changes in all these fields (namely, the mood the content of thought and the intellectual function), the change in one of them usually overshadows the others and dominates the clinical picture. Thus, we have three broad types of psychoses: (1) Those in which some profound emotional disturbance dominates the picture. We call these the affective disorders. (2) Those where there are hallucinations or delusions, without much emotional change. These are the paranoid psychoses. (3) Psychoses characterised by impairment of the intellectual functions—the organic psychoses.

The Affective Disorders.

In the affective disorders, the prognosis is generally good. The more acute the onset, and the more dramatic the symptoms, the sooner will the patient recover. Acute cases recover in from three to six months, while cases of gradual onset and less profound change take from five to seven years to run their course. If, in addition to the emotional change, such patients have definite delusions of unworthiness, sinfulness, or fear of torture, then certification must be resorted to. Many cases of affective disorders, however, do not present definite delusions, but have mental trends of a self-depreciatory kind; they feel "no good," or wretched; the difference is only one of degree. In that event, the management of the case depends on the financial status of the patient. If he can afford it, he should go to a registered hospital as a voluntary patient; and the sooner he is in hospital the better. He will be in the hands of people who understand his illness; cared for by nurses trained to deal with such cases; in a place properly equipped for the treatment, by physical, psychological and occupational means, of the illness from which he suffers. There should be no hedging about going to hospital. The situation must be faced and dealt with. It is the duty of the profession to kill the old, fatalistic attitude to mental hospitals. The patient and the relatives should be made clearly to understand that the sooner the patient is in hospital the better his chance of early recovery. One hears all sorts of arguments about the unfortunate effect upon the patient of placing him among a lot of "lunatics." There are two answers to this: one is that these cases are often worse at home than in hospital; and the other is that one has never seen or heard of a patient being definitely, unfavourably affected by being in

an environment of people suffering from a kind of illness similar to his own. Moreover, any psychiatrist can tell of innumerable cases which have become certifiable and have run a protracted course, when voluntary admission to hospital in the early stages would have resulted in recovery long since.

If the patient is in straitened financial circumstances he cannot go as a voluntary patient to the ordinary rate-aided hospital in England. Such patients must be treated at home, preferably with regular visits to some out-patient clinic for psychiatric cases. It is important that the sleep and weight be recorded carefully. To secure sleep and diminish agitation, veronal in 5 or 10 grain doses, thrice daily, is effective. It should not be continued too long; and, after a week or so, bromide in 30 grain doses, t.i.d., may be substituted. The gospel of fatness has stood the test of time; and by means of gastric tonics, cod liver oil, arsenic and iron, the weight should be built up. Drug therapy, however, only helps us in the alleviation of symptoms. The psychosis is a distortion of the individual as a whole. We all know how easily habits are developed. Now, psychotic behaviour and modes of thinking are apt to become a habit with the patient, and so set up a vicious circle. We should endeavour, therefore, to make the patient develop habits of ordinary behaviour and ordinary thought.

The two great means of doing this are occupation and persuasion. Make the patient do something—no matter how simple, be it sewing, reading, painting, carpentry; anything so long as he is occupied, preferably with some creative work; something he can look at and realise that he has done himself. In this way, nor only do we tend to keep the patient's thoughts off himself, but we restore his broken self-regard and feeling of usefulness. Occupation is not suitable for the more acute forms of these psychoses. It is a mistake to force the pace too much, but firmness is essential; and we must be guided by the condition of the patient. In any case, a patient who is suitable for home treatment is, in all probability, suitable for occupational therapy. Persuasion is more logical than crude suggestion, and less coldly intellectual than argument. It means not only pointing out to the patient that he is ill, that he must regard his distress as a symptom of illness, and that he will get well; but we must stimulate him; point out his duty to others; fill him with hope, and reason out his little troubles one by one as they arise. Make him feel that we understand him, and that we want to help him; give him some model on which to arrange his life; give him a daily programme, and let him take a pride in keeping to it; for discipline is of great help in restoring a feeling of self-regard in patients suffering from these psychoses. Finally, the possibility of a suicidal attempt in states of depression must never be forgotten; and the relatives should be warned not to let the patient be alone.

The Paranoid Psychoses.

The next group, the paranoid psychoses, with their lack of emotional disturbance, but profound change in the content of thought, are extremely unfavourable cases, usually of long and insidious onset, and eventually ending in a fixed delusional system. Early certification is desirable, not only from the point of view of the patient, but also from the social point of view. Many of these patients get themselves into difficulties with neighbours, the police and other public bodies, because they think they are being watched or persecuted, or because they believe themselves to have some great reformatory mission in life. As soon as one can write down some odd belief of the patient's, which, in non-technical terms, clearly demonstrates his lack of insight into his condition, he should be certified. Because of this lack of insight it is usually impossible to get the patient to go voluntarily to hospital. On the subject of certification it may be said, in passing, that the writer of the certificate, no matter how often he has written one, should bear in mind two things: (1) to read carefully and obey to the letter the marginal notes and instructions on the certificate form; (2) to put down only matters of fact—not opinion—and to avoid technical terms, remembering that his certificate has to convince a layman of the patient's unfitness to manage himself or his affairs.

The Organic Psychoses.

The last group are the organic psychoses, characterised by intellectual impairment. Now, intellectual impairment is an almost infallible criterion of actual disease, injury or poisoning of the brain. We may, therefore, usefully recognise two sub-divisions of this group. They are: (*a*) psychoses with organic brain disease. (*b*) Psychoses with other somatic disease. Both of these sub-divisions call for special physical investigation. We should, therefore, get the patient into a nursing home or general hospital—according to his financial status—in order to do the following: lumbar puncture; fundus oculi examination; blood pressure; microscopical urine examination and kidney-function tests; complete blood count. Our lumbar puncture will settle the question of general paralysis, cerebral syphilis and a few other organic nervous diseases. If we find evidence of general paralysis, then malarial treatment should be given if the cardiovascular condition is satisfactory. Many cases are sufficiently well mentally to permit of this being done in a general hospital. If syphilis can be ruled out, we should seek carefully for evidence of arteriosclerosis in the urine, blood pressure and fundus oculi. Many arteriosclerotic patients have exacerbations of mental symptoms from time to time, and sometimes, in such exacerbations, they are certified. Unless excitement is extreme, this is not a justifiable course to take without first trying the effects of free purgation, by saline purgatives, diminution of protein intake and exhibition of iodides. It is surprising how many patients, apparently with arteriosclerosis, show a great mental improvement under such treatment. If syphilis and arteriosclerosis can both be ruled out, alcohol should next be considered; and here the history should help us. The prognosis for acute attacks in alcoholic psychoses is very good, and most of them may be treated at home; but, of course, future attacks are extremely likely to occur, unless the patient is willing to go to hospital for a prolonged period. Lastly, if all these conditions can be ruled out, we must seek some gross infection. A leucocyte count should help us; and, in addition to the usual places of focal infection, the urine should be examined bacteriologically, because a *B. coli* infection of the urinary tract is not rarely the focus, and one can recall at least one miraculous cure of a psychosis by the exhibition of large doses of bicarbonate of soda.

Summary.

Three types of psychosis are seen in middle life. They are: (1) The affective disorders, where exaggeration of the emotional state is the cardinal symptom. (2) The paranoid psychoses, characterised by delusions and hallucinations, without much emotional change. (3) The organic psychoses, characterised by intellectual impairment.

In the affective disorders, the prognosis is good in direct proportion to the acuteness of the symptoms. Certification, voluntary admission and home-treatment are appropriate to varying degrees of the disorder. The paranoid psychoses are unfavourable, and call for certification. The organic psychoses may be associated with disease of the brain, or with other somatic disease. The presence of syphilis, arteriosclerosis, alcohol or gross infection should be determined by extended physical examination. Many cases in this group—particularly those associated with arteriosclerosis, alcohol and gross infections—are capable of being satisfactorily treated under home conditions.

A brief survey of a large clinical field is necessarily didactic. There are exceptions to the rules I have formulated, but I have endeavoured to present a large field as a whole rather than to side-track the issue by a wealth of minute detail.

Clinical and Laboratory Notes.

THE MEINICKE MICRO-REACTION.

By G. de M. Rudolf, M.R.C.S. Eng., D.P.H., D.P.M.,
SENIOR ASSISTANT MEDICAL OFFICER, LEAVESDEN MENTAL HOSPITAL; LATE ASSISTANT MEDICAL OFFICER, CLAYBURY MENTAL HOSPITAL.

MANY tests have been devised with the object of obtaining some simple reaction for the detection of syphilis, but perhaps none is so simple as Meinicke's micro-reaction. The blood may be obtained from a prick, and the apparatus consists of platinum loops, microscope slides and cover-slips, a microscope and an antigen which is stable and can be bought ready for use. Although the reading of the test requires some experience, the technique is simplicity itself. Full details of the technique are sent with the antigen by Meinicke but will be found in English in a paper by Prentice in this journal.[1]

At the suggestion of Dr. G. F. Barham, medical superintendent of Claybury Mental Hospital, a number of sera have been examined by this test. The Wassermann reactions (W.R.) were performed on the same sera at the central laboratory of the London County Mental Hospitals Service by Mr. F. Partner under the direction of Dr. F. L. Golla, the director.

The accompanying table shows the results obtained together with those of some other workers. Of a total

—	Claybury.	Saunders.	Rucker and Whitby. I.	Rucker and Whitby. II.	Kovacs.	Prentice.	Total.
W+ M+	29	111	57	149	461	400	2461 (89·3%)
W— M—	302	799	151				
W? M?	2	—	—				
W.A. M—	—	9	—	11	29	103 (3·7%)	
W.A. M+	—	13	—				
W? M+	—	8	—				
W? M—	4	7	—				
W+ M?	2	5	—				
W— M?	42	13	—				
W+ M—	22	16	15		11		186 (6·8%)
W— M+	43	19	12		48		

W = Wassermann reaction; M = Meinicke micro-reaction.
A = Anticomplementary.
+ = Positive. — = Negative.
? = Doubtfully positive or doubtfully negative.

of 2750 specimens examined 89·4 per cent. agreed with the results of the W.R. The percentage of agreements varied in the different series from 74·4 (Claybury) to 93·3 (Prentice[1]). When it is recalled that all the workers used practically identical techniques for the Meinicke micro-reaction, but that different techniques would be employed for the W.R., the high percentage of 89·4 for the total series is striking. Rucker and Whitby[2] carried out two series of tests. Column 1 under their names in the table shows the results obtained with an antigen prepared by these authors similar to Meinicke's own extract but without previous extraction of the horse-heart muscle with ether, whereas Column 2 shows the results obtained by these workers when Meinicke's own extract was used. The agreements were 88·5 per cent. in Column 1 but 93 per cent. in Column 2.

Rucker and Whitby point out that the chief difficulties in the reading of the tests occur in the sera from treated cases. Kovacs[3] believes that the test is definitely reliable in untreated cases and the statement has been made that the reaction is more sensitive than the W.R. Of 19 sera examined by Saunders[4] and giving negative W.R. with positive Meinicke micro-reactions, 11 came from patients who had had syphilis or had shown positive W.R. previously. Of 16 sera tested by the same author and giving positive W.R. with negative Meinicke micro-reactions 11 came from cases of general paralysis who had been given a course of two years' treatment with tryparsamide and salvarsan continuing up to two weeks before the tests.

In conclusion my thanks are due to Mr. F. C. Radley, laboratory assistant, Claybury Mental Hospital, for assistance in the work, and to Dr. Barham and Dr. Golla for permission to publish the results.

References.

1. Prentice, D.: THE LANCET, 1928, i., 493.
2. Rucker, E. A., and Whitby, L. E. H.: Brit. Jour. of Exper. Path., 1928, ix., 30.
3. Kovacs: See THE LANCET, 1926, ii., 875.
4. Saunders, A. P.: Arch. Path. and Lab. Med., 1926, i., 388.

A NEW METHOD OF MAKING A PERMANENT SUPRAPUBIC OPENING.

By W. Cuthbert Morton, C.B.E., M.D. Edin.,
HONORARY DEMONSTRATOR IN ANATOMY IN THE UNIVERSITY OF LEEDS.

PROSTATECTOMY leaves nothing to be desired when it succeeds; too often it either cannot be done or else fails. If the operation is performed the general practitioner must be prepared to lose a life otherwise good; if it is not performed, he may have to take part in the humiliating ritual of a painful catheterism or to stand by for a year while nature lines a suprapubic opening.

Two most unfortunate cases led me to wonder whether there might not be scope for a permanent opening lined by a tubular graft of the prepuce. At a first operation the distal margin of the protracted prepuce would be incised circularly and the inner layer inserted through a freshly made suprapubic opening so that its distal margin could be sutured around the incision in the bladder wall, after which the distal margin of the outer layer would be sutured around the cutaneous incision no raw surface being left exposed. At a second operation, when the graft should have taken, circumcision would free it and its cut edges would be joined by suture. Three or four weeks should be enough for obtaining the permanent opening, and contraction of the linea alba might enable the urine to be held for some hours. The catheter, should it prove necessary, would cause little pain since the nerves to the graft would have been cut by the circumcision.

FIG. 1.

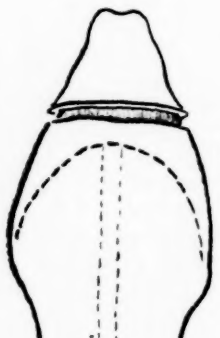
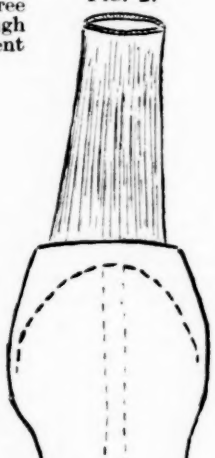


FIG. 2.



Diagrams showing incision in outer skin of the prepuce.

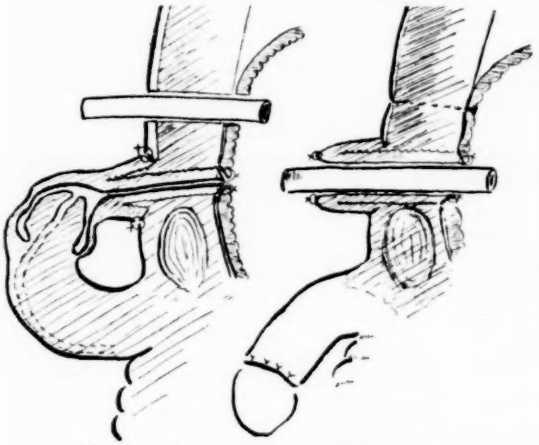
Description of the Operation.

Mr. L. R. Braithwaite, with whom the question was discussed, at once arranged to try the method on the first suitable case. I am indebted to him for the following description of the operation and above all

for the interest which he has taken in the method and for the successful issue which means so much to my patient.

"The patient was a man 65 years of age, with a urethral stricture of such a kind that it was impossible to pass the finest bougie through. A radiogram of the injected track through the stricture showed it to be not only an exceedingly narrow one but also

FIG. 3. FIG. 4.



Mesial section. Oblique section.

one of the 'corkscrew' variety, too extensive in its length for successful excision or incision. Cystitis of the foulest type had developed and the condition of the patient was so low that a suprapubic drainage had become essential two months before the new operation was attempted. As a result of drainage and lavage the degree of cystitis was much diminished.

"Provision must be made for temporary bladder drainage during the fixation of the pedicle graft. In this case the usual incision above and very close to the symphysis pubis had been already made and a self-retaining catheter was acting as a 'permanent' bladder drain.

"The catheter having been removed, the whole of the track from skin to bladder wall was excised, the wound being lengthened at the same time so that it was about two inches long. With a finger through the wound an incision was made through the abdominal wall into the bladder, one and a half inches above the level of the upper edge of the lower incision. Into this upper wound the temporary bladder drain was placed (Fig. 3). The prepuce, having been drawn out fairly tightly, was encircled by an incision about half-way along its length, dividing the outer skin of the prepuce only (Fig. 1). The distal cuff of skin was then drawn forwards (inverted) (Fig. 2), making a long tube, lined by skin on its inner side. This tube was to be made to lie in the substance of the abdominal wall from skin to mucous membrane of bladder. The elongated cuff of prepuce was now drawn through the prepared track and fixed by six fine catgut stitches accurately to the bladder edge (Fig. 3). The old abdominal wound was now stitched closely up to the preputial tube and that portion of proximal preputial outer skin left covering the glans was easily stitched to the abdominal skin at the margins of the old suprapubic wound, drawing the glans fully up to the abdomen.

"Some œdema of the prepuce developed outside the abdominal wall, but no evidence of impending gangrene. After 14 days a circumcision was performed and the penis allowed to fall back (Fig. 4). In three days the tube in the upper suprapubic wound was removed and another smaller tube placed along the new track now fully lined by preputial skin. In 10 days the upper suprapubic wound was completely closed by natural means. For three or four weeks the preputial graft remained swollen and œdematous, after that time it became normal and has shown very little, if any, signs of contraction. The skin-lined track has certainly become much narrower but no more than is necessary to keep it watertight. The result has been very gratifying. It is of interest to quote from the patient's letter to Dr. Morton, dated May 7th, 1929:—

"I find it only necessary now to pass water about once in five or six hours—never less than four hours—using a short silver or plated catheter, No. 8, which of course means getting a good night's rest. No leakage occurs unless, through force of circumstances, I am obliged to disregard the warning desire to relieve the bladder, and then a small quantity, say about a tablespoonful, is passed through the urethra only. Believe me, my best thanks will always be due to yourself as the inventor of the operation, and to the surgeon who performed it at the infirmary, and afterwards directed its treatment.

"Seen a few weeks ago the patient was wearing no dressing of any kind over the new opening, it was perfectly dry, and showed no sign of irritation. The new track was free from all pain or tenderness and the introduction of the short straight tube was accomplished with the utmost ease and celerity. There can be no doubt whatever that the operation has its use though obviously limited by reason both of sex and sect."

HEPATIC AMŒBIASIS SIMULATING CHOLECYSTITIS.

DRAINAGE OF ABSCESS BY CHOLECYSTOSTOMY: RECOVERY.

BY IAN MACDONALD, M.D. EDIN.

IN a valuable paper on hepatic amœbiasis, based on a surgical experience of 252 cases, Lacaze and Melnotte[1] emphasise the difficulties of its differential diagnosis. Confusion with cholecystitis and appendicitis is apparently not infrequent when the attacks are periodic and associated with rigidity of the right side. In the case reported here, the preoperative diagnosis was cholecystitis and appendicitis, though the possibility of an amœbic abscess was not forgotten. Conservation of the gall-bladder fortunately allowed satisfactory drainage of the abscess.

The patient, a military man aged 39, was admitted suffering from acute pain in the right hypochondrium and right side down to the iliac fossa, with irregular fever, which had reached 103° F., accompanied by sweating and chills. Pain had been so severe that morphia had been necessary night and morning for a week. He had had one previous attack of dysentery 18 years before in Morocco. He had suffered in ten years from three similar attacks of pain, which had been diagnosed as biliary lithiasis. During the last eight months the attacks had been more frequent, but in all the intervals the patient had been quite well. He was a thin, sallow-looking man with a subicteric tint. Palpation elicited great pain down the right side as far as McBurney's point. Palpation for abscess laterally and posteriorly between the ribs was quite negative. The patient insisted on the severity of his subcostal and right-sided pain. Percussion of the liver seemed to show enlargement, but even light percussion was extremely painful and the right rectus muscle was continuously contracted. There were no urinary symptoms nor antecedent dyspepsia. In the attacks the pain radiated upwards towards the chest, shoulder, and back. On admission more morphia had to be given as the pain was so severe, but the pulse-rate was only 80.

Operation.—Under ether anæsthesia the abdomen was opened by a long Kocher incision with a short vertical prolongation upwards in the middle line. A large liver was exposed, and on lifting its anterior edge a very thin-walled, dilated gall-bladder prolapsed into the wound. The gall-bladder was about four times its normal size and had the colon fixed along its under surface. This adhesion, however, proved to be a fine flattish fold; on cutting it the neck of the gall-bladder was easily reached. Palpation of the ducts revealed no stones and it was difficult to account for the obvious stasis in the gall-bladder. Palpation of the upper and lower surfaces of the liver showed no definite abscess, but needling was not employed. The gall-bladder was next

[1] Lacaze, H., and Melnotte, P.: Rév. de Chir., 1928, lxvi., No. 10.

opened after emptying it of foul-smelling, black bile; it contained no calculi. In view of the poor condition of the patient, the obviously enlarged liver, and the uncertainty of the nature of the cholecystitis, simple cholecystostomy was selected as least likely to cause trauma to the liver. A piece of omentum was fixed between the raw surfaces of the gall-bladder and colon and a large Pezzer catheter was placed in the gall-bladder. The appendix was then removed, without invagination of its stump, through a small McBurney incision. It was obviously diseased, contained two stercoliths, and was acutely kinked about the centre.

The immediate results of the operation were excellent. The acute crises of pain at once ceased and a large amount of black, fœtid bile was discharged by the tube. On the third day, however, the bile became turbid, and slimy pus, with pieces of necrotic material mixed with small blood-clots, was evacuated by the tube. Though a laboratory report of the pus and fæces was negative for amœbiasis, the clinical diagnosis was now clear. Four centigrammes of emetine were administered night and morning for twelve days, and 50 cg. of stovarsol were given daily by the mouth. The purulent discharge rapidly lessened and in ten days the bile was practically clear of pus. The tube was removed on the nineteenth day and the patient left, with the wound soundly healed, one month after admission, with instructions to continue the emetine treatment during a fortnight in each month. Three months later he was in excellent health.

Huelva, Spain.

New Inventions.

AN IMPROVED ARTERY FORCEPS.

THIS is a modified dissecting forceps having jaws similar to the standard Spencer Wells's artery forceps, and is fitted with an improved spring catch which locks, when compressed, and unlocks with further compression. The forceps can be readily manipulated

in the hand, there being no delay in inserting digits into rings as in ordinary forceps and they can be gently and easily removed with either hand, even by an unpractised assistant.

These forceps have been made to my special design by Messrs. Allen and Hanburys, Ltd., Wigmore-street, London, W.

HUGH DONOVAN, M.B., Ch.B. Birm., F.R.C.S. Eng. and Edin.

A LABOUR SAVER IN THE EXAMINATION OF URINE.

Disliking the task of filling test-tubes direct from a pot and having to wash up a greater number of pieces than necessary, I have had a battery hydrometer

adapted for urine. This instrument, shown in the illustration, will pick up a specimen from any kind of vessel, give the specific gravity, and fill a test-tube without spill or mess. The usual cleansing of pipette urinometer and trial jar is reduced to the one simple operation of drawing in clean water and squirting it out again.

The hydrometer may be obtained from Messrs. A. Charles King, Ltd., 34, Devonshire-street, London, W.

G. RAMSEY PHILLIPS, M.R.C.S.

ROYAL SANITARY INSTITUTE.

CONGRESS AT SHEFFIELD, JULY 13TH–20TH, 1929.

THE fortieth annual congress of the Institute was in some ways the most successful of the long series. Its keynote was coöperation. One notable event was that the congress set its seal on the inclusion of mental hygiene within the purview of public health. The delegates who visited Sheffield for the first time and had heard it described as "a bit of hell dumped down in heaven" would not wonder at the beauty of its environment, made accessible to them by many excursions and much hospitality, but they may have been agreeably surprised at the evidences everywhere of a progressive municipality.

AMENITIES OF CIVIC LIFE.

Mr. W. J. HADFIELD, the city surveyor, described the great increase in the number of asphalt roads. In 1917 there were 1316 super. yards and in 1929 just on a million. Mr. Hadfield claimed for them greater cleanliness and silence and also durability and economy in construction, and received many congratulations from his engineering colleagues. Mr. WM. TERRY (general manager) described the excellent municipal water-supply, and incidentally put in a plea for "the effective control of both surface and underground waters by a properly constituted authority entrusted with the duty of husbanding the national sources of supply and allocating them to the best advantage."

Councillor W. ASBURY, chairman of the Sheffield Health Committee and of the Sheffield and Rotherham Joint Smoke Abatement Committee, presided over a good discussion on smoke abatement, and advocated that the whole country should be mapped out into regional areas, each controlled by a joint committee with statutory powers. When this had been done a central committee could be formed to consider the best method of tackling the problem on a national scale and to conduct research work and arrive at a uniform standard. The Rogers Field medal, the principal award offered by the Institute, was won by Low Temperature Carbonisation, Ltd., for an exhibit of Coalite Radiant Smokeless Fuel. This medal has only been awarded twice previously during the past 25 years.

During the discussion Mr. H. G. CLINCH (chief sanitary inspector, West Ham) referred to a similar coke produced by the Gas Light and Coke Company and sold under the name of Gloco. The delegates who saw the Coalite fire burning in the exhibition must have agreed with Mr. Clinch that when such a smokeless fuel is available generally at a reasonable price no hardship will arise from the prohibition of the use of raw coal for domestic purposes and the domestic smoke problem will have been solved.

Most of the delegates utilised the efficient municipal tramway and motor-bus service, many visited the sewage disposal works to see a good illustration of the bio-aeration system, and the new municipal abattoirs received unqualified praise.

The discussions held and the papers read at the 12 sections and conferences were very numerous, and it is only possible to refer to a few of them in detail.

MENTAL HYGIENE.

The first session of this discussion was devoted to the interests of the child and the second was from the point of view of the adult. Prof. ARTHUR HALL, who presided, referred to the pioneer work of Wycliffe Wilson, who had always attached great importance to the moral and mental effect of the "scattered homes" for poor-law children, for the origination of which he would always be gratefully remembered. He went on to refer to the out-patient department of the South Yorkshire Mental Hospital, which was endeavouring to get hold of early cases, but also needed beds for short-stay cases.

The Child.

Dr. RALPH H. CROWLEY opened the discussion on mental hygiene for the child. This was, he said, an

extraordinarily difficult undertaking. The gaps in our knowledge as to the prevention of undesirable and harmful mental states should warn us against undue optimism. We needed to learn the significance of behaviour problems in general and for any particular child. Only after much patient work should we learn what abnormalities in behaviour were significant, at what age and in what combinations; and what are probably the forerunners of delinquency, of crime, of nervous disorder, of insanity. A public organisation would be needed to secure the team work of psychiatrist, psychologist, welfare worker, nurse, teacher, parent, and child. The retarded children, who formed 10 per cent. of the school population, would claim special attention. A child who was a failure at school early lost heart and made a bad start for his adolescent life. The specially trained staff was the crux of the matter. Hitherto we had devoted ourselves too exclusively to the manifestations of the mind through the intellect and had neglected the manifestations of the mind through behaviour, and there was in consequence much undeveloped creative activity. Men and women were not making their full contribution to the common life. Mental hygiene must take its place as part of the public health service. The resources of the community must be brought to the service of the individual at each stage of his life so as to give him the chance of the fullest and highest development.

Dr. WM. MOODIE (Child Guidance Council Clinic) referred to the anxieties of parenthood, which could be greatly minimised if the parent were warned beforehand and given confidence to face potential troubles. "Parent teacher" associations, pre-natal clinics, and nursery schools could do excellent work. For the effective working of child guidance clinics it was essential to have specially trained social workers, because parents and relatives could not accurately and impartially describe their problems, which had an effect on the child.

Dr. LETITIA FAIRFIELD referred to the large amount of obscure talk about psychology. At present they only dealt with end-results; yet naughtiness was more important, though perhaps less interesting than criminology. They must spread the knowledge of psychology to all who had to care for children. Consultant clinics for difficult cases were needed. The period under five years was the most important, but it would be ridiculous to have child guidance clinics for that age, and they must work through the mothers and the teachers, through maternity and child welfare centres and nursery schools. There was not enough character training in the maternity and child welfare centres and there were not enough "McMillan" nursery schools. At the age-period from 5 to 16 the child only spent a fraction of his life at school. In America they had endeavoured to fill this gap by appointing home-visiting teachers. An out-patient mental clinic could not work successfully without expert home visitors. In Canada the work of ascertaining mental deficiency was being extended to conduct troubles and problems, and the school nurse was specially trained in mental hygiene. Child guidance clinics would be a great disappointment if they were not conducted by real experts.

Dr. EVELYN FOX (Hon. Secretary, Child Guidance Council) stressed the importance of social workers being trained in this dangerous and difficult work. The medical profession did not yet appreciate what was meant by a mental hygiene social worker. They must create a demand for such workers, who would be the passers-on of the skilled advice of the psychiatrist to the family.

Dr. G. A. AUDEN (school medical officer, Birmingham) pointed out that nursery schools could not put right home maladjustments. The parents of only children needed instruction that their child had to live its own life and must learn to stand alone. The sense of inferiority in school work was often the beginning of trouble.

Dr. A. E. NAISH agreed that the mental upbringing of children was neglected, but said we must go slowly. Years of study were needed and mental hygiene would be an art and not a science for a long time. At early ages we must work through the mother. Unless we had good instruction to give it was better to give none at all. The child must be given its own reasons for controlling its emotions. Councillor OLDERSHAW (chairman of the Health Committee, Maidenhead) said that in his experience as a crammer he had to deal with many "only child" and "step-mother" failures. He sounded a note of warning as to the trouble caused by bad psycho-analysis.

Dr. HARVEY SUTTON (New South Wales) said that it would be necessary for the child guidance team to keep an all-round view and not neglect the physical side. For example, deafness might lead to incorrigibility. The school medical officer needed some training in psychiatric work. Dr. COLSTON WILLIAMS (Glamorganshire) asked how we were to make a beginning.

The Adult.

Dr. E. MAPOTHER (superintendent, Maudsley Hospital) said that in a wide sense the aim of mental hygiene was the abolition of madness, badness, and sadness. He found that mental disorders only had an organic origin in 25 per cent. of the total, and that there was a distinct decline in the cases caused by alcoholism and syphilis. As regards functional mental disorder there was no true prophylaxis as yet, only the possibility of early treatment. It was impossible to shelter the potential neurotic from injurious experience, and many of the world's greatest achievements had been made by the unstable facing the risks of a breakdown. Even from the neurotic's own standpoint it paid better to live dangerously than to play pawky. Dreary second-rate lives were a more frequent cause of mental disorder than overwork or disaster and the infliction of security through renunciation was the worst of services except on real proof of necessity. The pivot of the system of early treatment was the psychopathic clinic, and at present the only English example was the Maudsley Hospital. In its first six years this hospital treated 3000 in-patients and 7000 out-patients. None of these patients had ever been certified and less than 1 in 8 had left against advice—just because they were free to do so.

Dr. W. VINCENT (medical superintendent, Wadsley) said that every public hospital should have its special department for incipient mental disease. There should be beds available as well as an out-patient department, and specially trained home visitors on the staff. Dr. R. W. GILMOUR (lecturer in psychiatry, Middlesex Hospital) held a brief for the minor mental and functional nervous disorders. The alienist was more interested in the individual and the physician or hygienist in the case, but they were all coming together gradually. The wrong mental interpretation of sensations was a great source of misery and was not cured by saying "Don't be silly!" Early mental symptoms needed treatment just as much as early symptoms of physical disease. Mental defect due to birth injury was not transmissible to the children. Much was said about the inferiority complex, but he considered the superiority delusion just as important.

Mrs. C. B. S. HODSON (the Eugenic Society) said there was a distressing increase in mental disorder in many countries. She showed charts to illustrate the increase in this country from 1859 to 1913, and the fact that the increase was chiefly among pauper lunatics. She thought the eugenist should be linked up in the team and that the time would be ripe for a real consideration of sterilisation at their next meeting. The eugenists did not aim at the production of supermen, but rather wished to eliminate the non-adaptables, who could not afford to live dangerously.

Dr. G. MOULD (physician, mental diseases, Royal Hospital, Sheffield) spoke from 30 years' experience of a mental clinic at a general hospital of the value of such clinics.

Dr. A. GURNEY YATES (Sheffield) said the time was ripe for dealing with early cases by an organised scheme. The Royal Infirmary had just started a mental clinic. In the treatment of early cases they would be able to study causation.

Prof. W. H. FROST (Johns Hopkins University, U.S.A.) was much impressed with the fact that two sessions had been devoted to mental hygiene and that every speaker had made concrete proposals.

Councillor WILLIAMS (Sheffield) said we must have mental hospitals for mental breakdowns free from any slur or stigma. Other speakers dwelt on the bad effect of unemployment and a hopeless outlook, and that the public must be educated in the need for and use of mental hospitals.

Dr. MAPOTHER, in reply to a question as to the increase in mental disorders, pointed out that it was difficult to make a fair comparison with former years because the standards for discharge were now higher and the death-rate among the patients was lower.

LOCAL GOVERNMENT ACT, 1929.

Dr. J. J. BUCHAN (M.O.H., Bradford), in his presidential address to the Conference of Medical Officers of Health, which met on July 18th, dealt with the care of the sick under this new Act. He pointed out that Section 5, which exhorted councils to a certain course of action, was at present permissive in character. It enabled a council to declare in its scheme under the Act that any medical assistance shall not be of the nature of poor relief, but shall be provided under the Public Health Act of 1875. The mere change of ownership of hospitals from guardians to councils was of no moment, unless accompanied by detailed changes in working. Even the best poor-law infirmaries were seldom quite free from remnants of the old deterrent principle. Admission to the new hospitals must be made easy for persons that needed hospital treatment. The recovery of expenses must not be made in such a way as to deter sick persons from seeking hospital treatment. Hospital provision was an exceedingly onerous duty, and they must get what help they could from voluntary bodies.

Dr. W. ALLEN DALEY (M.O.H., Hull) detailed the advantages which would accrue to the maternity and child welfare and school medical services if the Act were properly worked. He referred to the "penal" clause, Section 104, which enabled the Minister to reduce the grant payable to any authority if satisfied that such authority had failed to achieve a reasonable standard of efficiency, and also gave a statutory right to voluntary bodies to make representations to the Minister if services in their area appeared to be neglected. Grants which had formerly been made direct to voluntary associations would now be made through the local authorities. In the case of rescue homes it was properly thought desirable to remove an unmarried expectant mother to a distance from her old surroundings. Such rescue homes should not lose their grant because they catered for persons from another district. The health committees ought to become the new public assistance committees. The health committees would run all institutions and have much responsibility for the provision of proper dietaries. They would also need to coöperate with the voluntary hospitals and be able to provide good hospital accommodation for tonsils and adenoids. Health visitors, who had hitherto acted as relief officers, without proper liaison with the poor-law officers, would now be relieved of the undesirable duty of making inquiry into the financial circumstances of the people they visited. Such inquiry for assessing relief must now be done scientifically by one body, and one register must be kept for the purpose of all kinds of assistance.

Dr. W. M. ASH (M.O.H., Derbyshire) described a scheme for a complete maternity service within his county which had been already initiated. The scheme made use of existing institutions, and his survey had shown that there were hospitals in existence within five miles of every home. He proposed that, in lieu of building new institutions, additional bed accommodation for maternity cases should be provided at these existing hospitals. The staff of these hospitals would include midwives for intern and extern services and a staff of nurses, separate from the midwives, who would do district work. An ambulance would be provided at each hospital and the services described would be available by use of telephone and motors for domiciliary purposes within a radius of five miles. Home helps would also be sent out from the hospitals when needed, and sterilised outfits. Married midwives and home helps might live near the hospital and not necessarily in it. All antiquated poor-law buildings must be discarded and the new medical services made attractive. They must endeavour to secure the full coöperation of all voluntary institutions and bodies such as the Red Cross.

ABORTION.

Mr. C. J. HAWORTH (coroner for the West Riding) brought to the notice of the medical officers of health the increasing number of procured abortions, followed by illness if not death. Into one hospital in one year from a village with a population of 15,000 some 67 women were admitted suffering from incomplete abortions. None of these died, but, following inquests on some deaths in a neighbouring village, the epidemic of abortions in the first village ceased. It was significant that when there had been a conviction there was a lull of miscarriages in the district where the offence had been committed. Miscarriages in his opinion should be made notifiable. It was the clear duty of any medical practitioner when he was called in to a case of criminal abortion to report the matter to the proper authority.

SYPHILIS IN PREGNANT WOMEN.

Mr. JOHN ADAMS, F.R.C.S., described his experience at Thavies Inn V.D. centre. All the patients admitted are pregnant women affected with syphilis. Mr. Adams quoted from a paper by Sir F. W. Mott in 1912 and from the report of the Royal Commission on Venereal Disease, 1913, to illustrate the disastrous results of antenatal syphilis. The report stated that in the case of untreated syphilitic pregnancies, 50 per cent. of the fœtuses were stillborn, 75 per cent. of the living children died within the first year, mostly in the first week, and most of the remaining 25 per cent. died in early childhood. As a contrast Mr. Adams submitted a table showing the results obtained in all the cases of syphilis treated at Thavies Inn from September, 1917, to June, 1929:—

Cases treated.	Expected mortality of untreated cases*	Babies born alive. W.R. Pos.	Babies born alive. W.R. Neg.	Actual mortality.	Fœtuses born dead from syphilis.
267	178	86	159	1917–1919..4 / 1928..1 } 5	14

* See Royal Commission, V.D. Report, 1913.
W.R. = Wassermann reaction.

The treatment of the syphilitic mother and of the living child born to her should begin at the earliest possible moment. He often began the treatment of the child within half an hour after birth. If the treatment of syphilitic babies was begun at once and continued for a sufficiently long time they compared favourably with ordinary healthy children. (Mr. Adams showed photographs to illustrate the results obtained.) The procedure usually adopted to obtain blood from babies for the Wassermann test was difficult, dangerous, and often unjustifiable. (Mr. Adams described his method which was quite easy, and showed the special needle with an arrow-shaped point which he used.) Of the syphilitic cases admitted to Thavies Inn from 1917 to 1929, 1 in 12 had gonorrhœa in addition, but the gonococcus was found microscopically in less than 10 per cent. of the patients so suffering. Mr. Adams went on to describe the treatment adopted for gonorrhœa and for the prevention of ophthalmia in the baby. During ten years at his centre there had not been a single case of gonorrhœa ophthalmia. With our knowledge of this power of saving infant life, it was almost criminal that more was not done by the setting aside of institutional

accommodation for these cases, and arranging for teaching to medical students and practitioners the special measures needed.

THE POPULAR LECTURE.

"Many Men, One Aim."

Prof. W. W. JAMESON said that with some justice we spoke of ourselves as pioneers in public health, but that, with our record of past achievements, we were inclined to be just a little complacent, and to give insufficient heed to the doings of other nations. By studying other peoples' methods we should be able either to improve our own, or to feel assured that we were working on the best lines possible. Dr. Jameson went on to give a most interesting account of the work of the public health services in Germany, in Poland, and in the U.S.A., and concluded with a quotation from a speech of Dr. Vincent, the president of the Rockefeller Foundation, describing an ideal internationalism that can hardly be bettered, in which "a generous national rivalry plays an even larger part without weakening true patriotic feeling. To contribute to a common world fund of knowledge, skill, and idealism becomes the ambition of each nation. Patriotism gains a nobler significance."

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE OPENING OF THE NEW BUILDING.

THE new building of the London School of Hygiene and Tropical Medicine was formally opened on Thursday, July 18th, by H.R.H. the Prince of Wales. The building was fully described in THE LANCET last week (July 20th, p. 149), with illustrations showing the important façades on Gower-street and Keppel-street, and the splendid library, and at the same time the origin of the school, the part played by British workers in its organisation, and the immense debt incurred to the Rockefeller Foundation were recorded.

The proceedings commenced with the reception of the Prince of Wales at the main, or Keppel-street entrance, by Lord Melchett, Chairman of the Board of Management, Sir Holburt Waring, Chairman of the Court of Governors, and Sir Gregory Foster, Vice-Chancellor of the University of London. The Director of the School, Dr. Andrew Balfour, was presented to his Royal Highness, as were the architects of the building, Mr. Morley Horder and Mr. Verner O. Rees, who offered the Prince of Wales the key of the building.

The Address of Welcome.

In the beautiful library a large and representative group of visitors were assembled to hear an address of welcome to the Prince, offered by Lord Melchett. The speaker pointed out that those responsible for the management of the School had embarked upon an enterprise made possible only by the benefaction of the trustees of the Rockefeller Foundation, which had realised that the claims of London as a centre for the teaching of hygiene and tropical medicine were unparalleled, and that assistance to provide the building of a central institute was therefore urgent. Lord Melchett reminded the audience that when three years ago the foundation-stone of the building in which they stood was laid by Mr. Neville Chamberlain, then Minister of Health, the American flag was flying side by side with the Union Jack above their heads, and the same was occurring to-day as a fitting reminder of their debt to American generosity. The absence from the ceremony of any representative of the Rockefeller Foundation was, he said, characteristic of the self-effacing policy of that establishment, while the Ambassador of the United States unfortunately had another engagement which could not be cancelled. Lord Melchett continued:—"The gift of the Foundation followed immediately upon, even if it was not the direct consequence of, the recommendations of a committee which met in 1921 under the presidency of a distinguished relative of your Royal Highness, the Earl of Athlone. The committee found the arrangements for teaching for the Diploma of Public Health in London scattered and inadequate. The great post-graduate teaching centre which the Athlone Committee visualised as a necessity at once became possible by the fact that the trustees of the Rockefeller Foundation offered the munificent gift of $2,000,000 for carrying out the project which the Athlone Committee recommended. In this way it became possible that hygiene and public health should have a university institution of its own. And when further in the course of our deliberations the Seamen's Hospital Society expressed their willingness that the old School of Tropical Medicine should become merged in the institution, we felt indeed that these great twin subjects of hygiene and tropical medicine had at last their long-sought opportunity, and that a new epoch in the history of medicine and related sciences, and in hygiene, was about to be opened. Mr. Chamberlain at the foundation-stone laying, reminded us of the distinguished part which his father, Mr. Joseph Chamberlain, had played in founding, at the instance of Sir Patrick Manson, the School for the study of diseases of the tropics, and it is a pleasure again to recall this fact. We shall continue to be indebted to the Seamen's Hospital Society for clinical and pathological facilities for the study of these diseases, now that we have entered into our new home." The speaker went on to point out that to-day the presence at their gathering of Mr. Chamberlain, the ex-Minister, and Mr. A. Greenwood, the present Minister of Health, was evidence that the School which, in union with the University of London, would be partly maintained by Parliamentary grants, and be open to all nations, would be in a position where party politics played no share, a position that was necessary for the establishment of the laws of health. It was, he concluded, the future duty of the British public and British Government to see that the School was adequately maintained.

The Prince's Speech.

The Prince replied to the address of welcome by formally declaring the building open in the following words:—

"You have right to be proud of the magnificent building in which we are, and if the museums and theatre and laboratories make good the promise of this library, you are to be congratulated upon a building that will be a notable addition to the homes of learning in London. While the part played by America has been described to you, the duty lies on both the British Government and the British people to see that this School is worthily endowed and maintained. The building is a sign that post-graduate education in medicine is about to come into its own. The establishment and endowment of this centre of teaching in preventive medicine is a signal example of the bond between the two great English-speaking races of the world. The chairman has rightly said that there are no territorial frontiers in hygiene. The instruction in the class rooms and laboratories of this building will be conveyed by medical practitioners of every nationality to the far corners of the earth. This research will find its results wherever man lives and moves and has his being.

"Three periods in medical science are stamped definitely, each with its own characteristics. The first, from 1870 to 1900, was a period of sanitary reform. The next period was marked by growing concern for the protection of the individual, which had been the basis of recent legislation, as evidenced by maternity and child welfare, the treatment of tuberculosis and National Health Insurance. We stand now in the early days of an era of preventive medicine in which the progress made in sanitation and care of the individual will be developed, and fresh research will lead to the solution of problems not yet solved and to the prevention of much ill-health. The establishment of this school is of special importance to the British Empire, and it has undertaken great responsibilities. In my travels I have learned personally the appalling loss of life and effort due to tropical diseases,

and I realised the great need for research in tropical medicine and hygiene. In the cause of hygiene generally the school will help and develop the growing work that has already been done. For these reasons I believe that the establishment of this school provides a great opportunity for this country and for the whole world.

"If its work is properly conceived and carried out, there should follow a special development and interest, and a quickening of the public conscience, which will lead to a steady decrease in preventible diseases, suffering and death. By its work in this connection the school will be judged."

The Addresses of Thanks.

A fanfare of trumpets sounded by the Coldstream Guards followed, when an address of thanks was presented by Sir Holburt Waring. Sir Holburt pointed out that throughout the erection of the building, and in every stage of its rise, the notion of a workshop had been kept clearly in view all the time. He said that the London School of Hygiene and Tropical Medicine was intended to be a centre of Imperial effort, and alluded to the pertinent fact that already the Court of Governors, as part of a policy of future development, had taken over from the Government of Southern Rhodesia the research station there. It would, he knew, be the policy of the School to establish a chain of such research stations throughout the Empire as adequate funds were forthcoming, and to send out expeditions from time to time to the tropics. As Chairman of the building committee he recalled that at the conception it had been decided that the first condition laid down for competing architects should be "Let there be Light," and in the employment of half a million sterling real concern he believed and hoped had been shown to make the expenditure wide and judicious. The Director of the School, the professors, and the departmental heads had throughout been consulted in the construction of their laboratories and workshops, and it had not been found necessary, thanks to the generous measure of the Rockefeller gift, to refuse a single request for any piece of essential equipment. He associated the Director, professors, and staff with the governors and the board of management in thanking His Royal Highness for the encouragement and inspiration of his presence.

Sir Gregory Foster, also, in thanking the Prince, said that the new School would rank as a part of the University of the metropolis—the University of the capital city of the Empire—and that its work would be organised, not for London, and not even for the Empire, but for the world. In alluding to the many great men who had been educated at the University of London, and who had gone forth to make the world a better and happier place, he said he would mention one name only, that of Lord Lister, who was a graduate of the University of London, and received his education in London. The Vice-Chancellor described in humorous terms the curiosity that had been aroused in the neighbourhood by the new building, the reason for whose existence the local public had not yet grasped, while he was certain that the new School would increase the tradition of magnificent service in the cause of humanity which the University of London possessed, by sending back students, who had arrived from all parts of the world to be taught, as missionaries of health.

His Royal Highness then visited the museum, the laboratories, and the lecture theatre, and before leaving the building met the workmen employed in its construction who were having their mid-day meal in a tent adjoining the premises. Here the health of the Royal visitor was drunk in beer with musical honours.

A large number of those who were invited to be present at the opening ceremony remained to luncheon as the guests of Lord Melchett, and afterwards, under the supervision of the Director, professors and members of the staff were shown around the building, and were present at cinematograph displays in the lecture theatre.

Reviews and Notices of Books.

ENZYME ACTIONS AND PROPERTIES.

By ERNST WALDSCHMIDT-LEITZ, Institut für Biochemie, Deutsche Technische Hochschule, Prag. Translated and extended by ROBERT P. WALTON, Department of Organic Chemistry, Columbia University. London: Chapman and Hall, Ltd. New York: John Wiley and Sons, Inc. 1929. Pp. 255. 20*s*.

THERE are many books upon enzymes. Some of them are almost entirely theoretical and physico-chemical; others are laboratory handbooks giving methods for the preparation of active ferments from their natural sources; others are largely catalogues of facts. This volume falls into none of these classes, but sets out to describe enzymes and their actions from a definite point of view—that of the Willstätter school. Prof. E. Waldschmidt-Leitz has played a considerable part in the brilliant series of researches on enzymes carried out during the last ten years by Prof. Willstätter and his associates at Munich, and his book has the value to be found only in the work of one who has himself had practical experience of the problems involved. In order to appraise the book it is necessary to consider in what respects the work of Willstätter differs from that of his predecessors. In the first place, he has set out to place the preparation of enzymes on a quantitative basis, such as is customary in experiments in synthetic organic chemistry, for example, and he has considered in all cases the number of units of enzyme activity recovered after purification as well as the unit-weight of the enzyme preparation. This outlook led to a greatly increased efficiency in the various steps used in purification. Many of the methods employed by Willstätter are based on selective adsorption of the enzyme on to various substances such as alumina and kaolin, and subsequent removal (elution), usually by alteration of the reaction of the medium. Such processes are not new, but in the hands of Willstätter and his colleagues they have led to some remarkable results, such as the separation of enzymes from their closely associated contaminants, from activators, and from other enzymes. Willstätter considers that the enzymes are composed of a colloidal bearer and a specific, active group, which enables them to be bound to the substrate, and the composition of the active group at the same time conditions the colloidal nature of the entire complex. One of the most striking facts which have emerged from Willstätter's researches is that the properties of the enzyme are often profoundly modified by their intensive purification. Thus the conventional view regarding the higher protein fission products as the specific substrate of trypsin, which only hydrolyses these substances in the presence of the activator enterokinase, has received a rude blow from some recent work of this school. Trypsin prepared by adsorptive methods did not attack ordinary peptides when activated by enterokinase; on the other hand, certain basic proteins, such as the protamines and also the products of peptic digestion, are rapidly broken down even by the non-activated enzyme. In other respects the conventional views receive short shrift from Prof. Waldschmidt-Leitz. Most text-books, even quite modern ones, state unequivocally that the gastric proteolytic enzyme is secreted as an inactive zymogen known as pepsinogen or pro-pepsin, which is converted to the active form by the action of the hydrochloric acid in the stomach. This view is based on the observed effect of acid (which may more logically be regarded as a pH effect), and the varying stability to alkali of the active and inactive forms. This variation of stability may, however, be due to different amount of associated substances in the enzyme solutions under comparison. In any case the evidence in favour of a zymogen precursor is very small.

The critical outlook of this excellent book will be clear from these examples. Its contents are well arranged and are divided into a general section, dealing briefly with the history of the subject, with enzymes considered as colloids and as electrolytes, and with the kinetics of enzyme action. The other half of the book deals with the various enzymes individually. Their preparation and properties are well described, again from the Willstätter standpoint.

To those who wish to read in a connected form the conclusions reached by this important body of scientific workers, this work can be strongly recommended. We dissent from the view of the translator that, among others, students of medicine will find the volume of service. In our opinion it is essentially a volume for the research worker, since though its pages show how unwarranted is the dogmatism of the ordinary text-books where enzymes are concerned, much of the teaching would hardly be well received by examiners at the present time.

VIRUS DISEASES.

Les ultravirus et les formes filtrantes des microbes. By Dr. P. HAUDUROY, Préparateur à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1929. Pp. 392. Fr. 40.

THIS monograph, which is the first on the virus diseases to reach us from France, starts badly, but improves as it goes on. The first part consists of a catalogue of the diseases and a summary of the known properties of the filterable viruses to which they are attributed. The information is neither happily selected nor critically presented. This part of the book, in fact, illustrates well the lack of system which has characterised the investigation of the agents of these diseases. The second portion is better compiled, and provides a comparative survey which is well worth reading. The author's views as here presented are on the whole orthodox. A serious defect is the absence of a bibliography. In the third portion of the book more rein is given to the imagination, and a very interesting thesis is developed. It is pointed out that many diseases of this type are definitely associated with certain micro-organisms which in our present stage of knowledge are not believed to be causal but commensual—in the French phrase they are "microbes de sortie." One would instance the almost specific salmonella in hog-cholera, *B. bronchisepticus* in distemper and, perhaps, Pfeiffer's bacillus in influenza. Hauduroy holds, as a corollary to his belief in the existence of filterable forms of the visible bacteria, with which the third part of this volume deals, that these are really the causal organisms of the diseases which are initiated by the filter-passing phase of the microbe's life-history. The belief in such phases for the larger bacteria has obtained little adherence in this country, since it is held that no very convincing evidence of their existence has been produced. However, so long as we remember that the foundations of the edifice erected by Dr. Hauduroy are inadequate for its superstructure, no harm can result from a cautious exploration of its features.

CONJUGAL LIFE.

Ideal Marriage. By TH. H. VAN DE VELDE, M.D. Translated by STELLA BROWN. London: Heinemann (Medical Books) Limited. 1928. Pp. 325. 25*s.*

IN view of the increasing tendency to seek for an elucidation of neurotic disorder in terms of disharmony of the sexual life, a good book by a responsible medical authority, written for medical readers, upon the physical aspects of marriage, should satisfy a need. Dr. Van de Velde has for some years been in charge of the Gynæcological Clinic at Haarlem, and this book has been written as a result of the experience gained in the days of his professional activity. This is the first of a trilogy of books and purports to deal with the sexual basis of married life. The second book of the trilogy will be called "The Prevention of Conjugal Aversion," and the third, "Fertility and Sterility in Marriage." "This first volume," it is stated in a preface, "deals with the physiology of conjugal life, because knowledge is the indispensable basis, both theoretical and practical, for success in marriage"; and its chief value rests in the frank and open way in which it discusses the conduct of marital relations.

It falls short of the ideal book for medical men in this, that whereas its sale is restricted to the medical profession in this country, it was not originally written, in German, for the medical profession alone. This is acknowledged in the preface, wherein it is stated that the book "attempts to help such married couples as have not recourse to doctors, without their intermediary advice." Actually this book has enjoyed a very considerable sale in Germany, where it could at one time be bought on most bookstalls. The result of this circumstance is that it contains some elementary anatomical descriptions that are likely to prove somewhat wearisome to the medical reader. Another drawback is that the style is pitched on a plane of ideality which is somewhat exalted for purely medical purposes. Thus, into the text are intercalated what the author, or the translator, has called three "Intermezzos of Aphorisms." These vary considerably in quality. They range from observations as excellent as "A husband's interest and honour alike enjoin that he should never permit himself a sexual gratification which he has not made his wife's desire as well," to other less edifying pronouncements.

In spite of these not very important defects, however, this book is to be recommended to those medical men who feel that disharmony in marriage is a source of mental stress of disorder to their patients, and who wish to equip themselves to give appropriate advice to remedy this disharmony, without having to read the ponderous volumes that are devoted to the study of sexology.

The Hygiene of Marriage. Second edition. By ISABEL EMSLIE HUTTON, M.D. Same publishers. 1929. Pp. 125. 5*s.*

THE first edition of this book was published in 1923, and an edition was also published in Dutch in 1925. To the practitioner who is asked by his patients for a work by a responsible author setting forth the facts of sexual physiology and psychology, this book is to be recommended. The anatomy and the physiology of the reproductive organs are explained in as much detail as is necessary, and the literary style is both simple and free from criticism. Despite its title, the book deals with the reproductive functions of woman as a whole. There are useful chapters on the onset of menstruation and the menopause which only very indirectly touch upon the question of marriage. Perhaps the most valuable feature of Dr. Hutton's book is that she makes the fullest allowance for the wide variations in sexual needs that occur in different people. Her method is to set forth the problem, and to leave the solution for the couple to reach in accordance with their personal characteristics. There are no generalisations made from religions or sociological preconceptions.

The book could offend no one seriously desiring knowledge and, suitably recommended, is capable of giving valuable help.

THE RHYTHMS OF LIFE.

By D. F. FRASER-HARRIS, M.D., D.Sc. London: George Routledge and Sons, Ltd. 1929. Pp. 185. 5*s.*

CERTAIN of these essays may have already met the eye of the reader, for they have appeared in well-known magazines and newspapers. They deal, in simple language, with such subjects—to select certain for example—as the eye as a camera, the comparative sensitiveness of the sexes, the analysis of tastes—i.e., of the true gustations, our debt to the microscope, and the cause of colour, the other themes being

similarly large in their relation to life, and similarly likely to escape exact comprehension until attention is directed to their problems—scientific or social. The volume makes excellent reading, for in sound but colloquial manner it deals with fundamental questions arising out of physiology, chemistry, and physics. Dogmatism is necessary in order to deliver the messages with appropriate brevity, but on the whole the teaching that the author lays down would find scientific support, although there are places where modern developments of particular branches of science have somewhat altered our views. Such essays as that on the cause of colour and that on the analysis of tastes, as well as the opening chapter which gives a name to the book, have real educative value, supplying information where the imperfectly equipped are perpetually puzzled.

HANDBOOK OF ANÆSTHETICS.

Third edition. By J. STUART ROSS and H. P. FAIRLIE. Edinburgh: E. and S. Livingstone. 1929. With 60 illustrations. Pp. 339. 8*s.* 6*d.*

THIS excellent little book has grown somewhat since its last edition and has now the advantage of Dr. H. P. Fairlie's coöperation. He has added a chapter on ethylene and oxygen and has brought other matters in the book up to date. The character of this work, which stamped it from the first as a really valuable handbook, has not changed. It is distinguished by an enlightened insistence on a proper knowledge of the physiological changes involved as the true basis of competent anæsthetic work, rather than a mere familiarity with a collection of apparatus. At the same time the essentially practical nature of the anæsthetist's activities are not forgotten. There is no small book better calculated to guide an administrator on safe lines.

THE GROWTH OF REASON.

By FRANK LORIMER. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1929. Pp. 213. 10*s.* 6*d.*

THIS is the study of the rôle of verbal activity in the growth of the structure of the human mind, and is the most recent volume in the International Library of Psychology, Philosophy and Scientific Method; it might well be read in connexion with an introduction to child psychology, contributed under the title of the Growth of the Mind, by Prof. Koffka to the same series. Mr. Lorimer, who is lecturer on "social theory" at Wellesley Psychological College, Mass., U.S.A., approaches the problem of the relation of thought and language through a study of verbal activity in children, acknowledging the inspiration derived from Prof. Dewey of Columbia University, while other authorities, whom he mentions by name, he credits with his ability to elucidate various technical and psychological difficulties with accuracy.

After sketching the evolution of thought prior to the employment of active language, the author traces the growth of verbal activity in the life of the child. Vocal activity we know to be a conspicuous feature of the infant's career, but here we have voice under its physiological description of a form of modified breathing acting conspicuously—and nothing more. Sounds can only become words by virtue of a social process, and a valuable section of the book illustrates this process and leads up to the three following sections showing that verbal processes, spoken or silent, supply the dominant system of human intellectual life. This conclusion, says the author, involves three things: (1) The establishment of fixed "symbolic relations" between unitary phonetic patterns and patterns of situation and behaviour (which are lacking in the fluctual relations of the "first words"), so that words may function as *foci* or *substitutes* for organic patterns in the processes of intellectual experimentation; (2) the development of fixed *relations of order* and sequence in the verbal processes themselves (systems of reference and inference in systematic thinking); and (3) the capacity for more and more intricate *correlation* of intellectual processes, including explicit symbolic systems." Mr. Lorimer's expositions are easy to follow, although his plan of work is not, and we have here a valuable book in which the relation of social to organic factors in thought development is traced, the argument being furnished for the general thesis that while animals may live well by instinct, and primitive communities by culture patterns, civilisation can live well only by symbols and logic.

ANTHROPOLOGY AND MODERN LIFE.

By F. BOAS. London: George Allen and Unwin. 1929. Pp. 246. 10*s.*

ANTHROPOLOGY studies groups of human beings in relation to their social setting. Prof. Boas has had a long and distinguished career as an anthropologist and in this book he summarises his views of the relation of his science to our life to-day. He deals with race, nationalism, eugenics, criminology, education, culture, and related topics throughout in an interesting way. As befits the real student, the author is evidently more impressed with the problems which remain to be solved than with what we have found out already, and the reader will be struck with the absence of dogmatism and the open-mindedness of the discussions. He has no quack remedies for our social evils and deficiencies; all we can do, he says, is to watch what we do in the light of what we have learned and shape our steps accordingly.

DISORDERS OF CHILDREN IN INDIA.

Birch's Management and Medical Treatment of Children in India. Seventh edition. By V. B. GREEN-ARMYTAGE, M.D., F.R.C.P., and E. H. VERE HODGE, M.D., M.R.C.P. Calcutta and Simla: Thacker, Spink and Co. 1929. Pp. 482. Rs.10.

THE publication of this edition perpetuates a work, the continuity of which has been maintained for 75 years. Originally written by H. H. Goodeve in 1844, it was remodelled by Brigade-Surgeon Birch about fifty years ago, since when it has been revised from time to time. The present authors have introduced much new material, and have brought the book thoroughly up to date.

The practicability of bringing up European children in India is the first question likely to be considered by those who have to decide whether to spend their married life in that country, and they are likely to seek advice first from their family doctor. It is thus not only medical men practising in India who may want to consult this work, the authors of which give clear information on the possibilities and limitations of family life in India. During the first year of life the child does not suffer injury; even up to the age of 5 or 6 the child's health may be perfectly satisfactory if special precautions are observed; but after this age the climate of the plains conduces to physical and moral degeneration. Children brought up entirely in the hills are in no way inferior to those brought up at home. The book contains short accounts of the disorders of childhood, and is not limited to purely tropical diseases. The chapter on rickets suggests that this disease is not as rare among any section of the Indian community as has sometimes been alleged. Infective bowel complaints are dealt with in some detail, and emphasis is laid on the extreme rarity of amœbic dysentery in children as compared with bacillary infections. The chapter on malaria is a particularly valuable one, the practical details of the treatment and its numerous difficulties being fully discussed. The authors disapprove of the routine use of quinine as a prophylactic.

This is a work for which there is likely to be a large demand, not only among practitioners but among educated Europeans who are faced with the problem of rearing children in India.

THE LANCET.

LONDON: SATURDAY, JULY 27, 1929.

AFRICA AND SCIENCE.

THE ninety-ninth meeting of the British Association for the Advancement of Science began in Cape Town on Monday; the concluding assembly will be held in Johannesburg on August 3rd, after which the members and visitors will disperse to visit some of the wonders of the continent. The whole affair will no doubt be a great success, and we can envy those who have been lucky enough to get there. While we wait their traveller's tales, we can get some idea of the atmosphere in which they are from the prints of the various addresses which are available. Nothing, perhaps, in these is more remarkable than the expression of the feeling that, just as facilities of travel have made a meeting in South Africa an easy possibility, so it has become the proper business of natural science to concern itself directly with humanity and its welfare; politics in the widest sense is now one of its disciplines. In his presidential address on the International Relationship of Minerals, Sir Thomas Holland, as might be expected from so practical a man, goes straight to the point, and shows how the control of mineral products means the control of war and peace as well as industry; it is a new departure to find the President's discourse leading to the conclusion that "the only two nations that can fight for long on their own natural resources are the British Empire and the United States; if they agree in refusing to export mineral products to those countries that infringe the Kellogg Pact, no war can last very long."

Africa is full of the varied problems raised by the intimate contact of advanced and backward peoples—by man's passion for interfering with the order of nature—and it is natural that the Association should pay a good deal of attention to these questions in the sections of anthropology, economics, and elsewhere. Philologists, economists, and cellular cytologists are all involved, and if their combined efforts can do something towards a happy issue, the advantages of such organisations as the British Association, which bring together workers and thinkers of so many different complexions, will be admirably illustrated. To consolidate the humanities of Africa into a coherent and harmonious civilisation will realise in the best way the doctrine of holism set out by General J. C. SMUTS—South African, botanist, philosopher, and statesman. The address of Vice-Chancellor J. H. HOFMEYR, with which the proceedings actually commenced, is perhaps of more local interest. He points out the opportunities which are available in Africa for opening up our knowledge of every branch of human interest. The apparatus and equipment—human and material—for the pursuit of natural knowledge, have been enormously increased since the last visit of the Association in 1905, and curiosity has grown with the chances of satisfying it; from the more narrowly economic as well as the wider scientific points of view, Africa is now at least as useful as any other part of the world. In our own extensive field, our readers will hardly need to be reminded on the one hand of the magnificent institutes for veterinary and medical research and on the other of the contributions which the study of trypanosomiasis, sleeping sickness and other diseases have made to our general knowledge of infections. South Africa is now being Africanised, it is acquiring a culture and outlook of its own, and in many ways it can and will help the rest of the world. Of the more immediately biological addresses, we give an epitome of Prof. W. E. DIXON's discourse on Physiology the Basis of Treatment on another page; Prof. A. C. SEWARD deals with fossil botany and the correlation of African with more northern strata; in Zoology, Prof. D. M. S. WATSON points out that while the fact of evolution is now believed in more firmly than ever, the mechanism of it seems more and more obscure, and he suggests that it is time to get nearer the basis of adaptation by a more intensive study of comparative physiology. Dr. J. S. HALDANE, General SMUTS, Prof. D'ARCY THOMPSON and others will discuss the Nature of Life, and may or may not succeed in getting nearer to finding out what it is.

GLYCOGEN, INSULIN, AND EPINEPHRINE.

GREAT as is the therapeutic and scientific value of the discovery of insulin it has not as yet simplified the physiology or pathology of diabetes. The cause of metabolic failure in diabetes is still to seek and there are many other problems which have resisted solution in spite of the new knowledge. Insulin has not proved to be a master key, but it has opened many doors and it has closed others by showing how slender is the evidence upon which certain orthodox ideas about carbohydrate metabolism are based.

In the lectures recently delivered by Prof. J. J. R. MACLEOD at the London Hospital, and published in our columns,[1] the results of recent work are set out in some detail. The fate of ingested soluble carbohydrates is of particular interest and some remarkable differences have recently been observed in the rate of absorption of different sugars. When these are given by the mouth absorption occurs very rapidly from the upper level of the small intestine, and according to C. F. and G. T. CORI the amount absorbed per hour per 100 g. of body-weight has a definite value for each sugar. Peritoneal absorption, on the other hand, appears to depend merely on the concentration of the sugar solution. The effect of ingested carbohydrate on the blood-sugar is well known clinically from the use of the glucose tolerance test, and the ingestion of lævulose and galactose has been studied in tests of liver efficiency. The fact that the consumption of these substances has such a slight effect on the sugar content of the blood, if the liver is working efficiently, is assumed to be due to the rapid polymerisation of these sugars to form glycogen by the action of the normal liver. But even the explanation of the presence of glycogen in the liver is still unknown; is it a simple storage of carbohydrate or is it, as CLAUDE BERNARD thought, a type of internal secretion, by which the glycogen is produced in the liver cells from non-carbohydrate sources? It is well known that new formation of glycogen, from protein or fat, or both, occurs in the liver during starvation, but it has generally been thought that the liver glycogen disappears when the fasting animal is made to do muscular work. This result has not been confirmed

[1] THE LANCET, July 6th, 13th, and 20th.

by some recent work discussed by Prof. MACLEOD. It is also questionable whether in pathological conditions glycogen ever disappears completely. The storage hypothesis does not explain the action of epinephrine and insulin on the liver glycogen. Epinephrine causes deposition of glycogen in the fasting animal and the breakdown of glycogen in the liver rich in this substance. The mechanism by which insulin acts is not yet clear, though it is now seven years since its remarkable property of lowering blood-sugar was first used therapeutically with miraculous success. Diabetes has often been attributed to a failure of the organism to oxidise carbohydrate. This is supposed to be shown by the low respiratory quotient, lack of ability to store glycogen in the liver, and excessive new formation of glycogen from non-carbohydrate sources. This view, based mainly on determinations of the dextrose-nitrogen ratio, has not in all respects been confirmed by recent work, and there are objections to some of the arguments brought forward in its favour. There is, moreover, some evidence that the diabetic animal is able to utilise the blood-sugar at approximately the same rate as the normal animal, though perhaps not to oxidise it at the same rate. It is possible that much evidence based on measurement of the respiratory quotient is unsound in view of the over-ventilation of the blood in the lungs in the eviscerated preparations used. I. L. CHAIKOFF and MACLEOD have found that the respiratory quotient following increased muscular activity is the same in normal as in diabetic animals. The total evidence available does not support the view that insulin merely acts by direct stimulation of the oxidation of carbohydrate. Nor is it possible as yet to say what is the fundamental cause of the metabolic failure. One theory is that only the glucose produced in the liver is excreted in diabetes, and that the diabetic muscle is unable to oxidise this glucose, although it can use it for glycogen formation. This is, of course, contrary to the usual view that the diabetic animal derives its energy from the combustion of fat and protein. At present all that is definitely known is that insulin given to diabetics causes glycogen to appear in the liver, whether or not carbohydrate is given to the animal.

In normal persons the muscle glycogen seems to be dependent in some way on the liver, while C. H. BEST, J. P. HOET, and H. P. MARKS have shown that glycogen formation following the addition of glucose to the blood can occur in muscle in the presence of insulin. Insulin is not, however, essential to the process, since glycogen is formed in the muscles of depancreatised animals. Experimental evidence suggests that either glycogen formation in the liver or increased production of insulin from the pancreas may be an essential preliminary to the formation of glycogen in the muscles of normal warm-blooded animals. The breakdown of glycogen in muscle has long been associated with muscular exercise; in a spinal animal the glycogen content falls when the muscle is stimulated. MACLEOD and FRASER, however, have recently shown that in rats working steadily the oxygen requirements of the muscle are adequately met and the glycogen need is sufficiently provided for. Only when the activity is so great that the oxidation of carbohydrate is defective does the glycogen content become appreciably lowered. These are only a few of the problems raised by the conflicting results of experiments devised to test theories of carbohydrate metabolism and to explain or confirm clinical findings. Luckily the impetus given to this study by Prof. MACLEOD, to whom the original researches of BANTING and BEST owe their initiation, shows no sign of slackening and it is unlikely that its force will be spent until the pathology of diabetes is cleared up, even if the exact biochemical changes involved cannot be repeated in the laboratory.

DROUGHT IN THE THAMES VALLEY.

THE effects of a dry summer following a dry winter are beginning to make themselves felt in the Thames Valley, although not to the same extent as in some other parts of England. With the recent memory of floods in the mid-reaches of the Thames it is difficult to visualise the fact that the rainfall of the past few months has been abnormally low, lower in fact than in any year since 1921, when the drought lasted until the end of August, to be succeeded by a gush of water which might have imperilled the public health, although it did not. Very little water is passing over Teddington weir, and the pool below consists practically of the same water which oscillates to and fro with the tide; the whole watershed of the Upper Thames is draining directly into the reservoirs which supply London with water; but even the immense new Littleton basin is not inexhaustible. We are assured that the Metropolitan area is not threatened with any immediate deficiency in supply, and although the Trafalgar Square fountains have stopped playing, as an object-lesson (they do not really use up water), local authorities have hesitated to issue appeals for economy because they feared to create an atmosphere of panic. We have not, in fact, arrived at the time when families must reduce their personal ablutions to a minimum, and use slop water for watering plants and garden, but the time has arrived when every patriotic householder will adopt altruistic principles in relation to public water-supplies, and avoid any unnecessary or luxurious use of tap water. To the majority of Londoners water only becomes attractive at the height of a heat-wave, and the consumption per head went up last week at least 25 per cent. over the average. Some time we must try to reach a tangible conclusion as to what is a reasonable rate of consumption per head of population in summer and winter, for the increased storage could no doubt be provided at a price, although the price might be so colossal that some adjustment of the personal water quota would be the thing to aim at. The way in which water was economised in the summer of 1921 was little short of amazing, and there was no evidence that the health of the community suffered in any way as a result of the drought, though their convenience and sense of well-being may well have been adversely affected by change of habits. Probably the restriction could have been carried much further than it was without serious harm. The violent outpourings of the last week-end should also remind the community of the risks of pollution when the dry period comes to an end, and the surface gathering grounds are subjected to sudden heavy rainfall. The value of chlorination under such circumstances has now been proved up to the hilt; it is far more effective than any possible injunction to the public to boil water when there

[1] Metropolitan Water Board. Twenty-third Annual Report on the Results of the Chemical and Bacteriological Examination of the London Waters for the twelve months ended 31st Dec., 1928. By Sir Alexander Houston, Director of Water Examination. London: P. S. King and Son. 21s.

should be a doubt about its purity, an injunction which is sure to be unobserved just where the necessity is greatest.

Compared with many rivers of the Continent of Europe, to say nothing of such streams as the Nile or the Amazon, the Thames may be an inconsiderable stream, but Sir Alexander Houston[1] tells us that in its course from Staines to Hampton the Metropolitan Water Board abstracts 152 million gallons of water a day, or, to put it in pictorial form, more than enough water to supply at 35 gallons per head daily the needs of Bradford, Birmingham, Glasgow, Liverpool, Manchester, and Sheffield. River water, unfortunately, has to be filtered and disinfected, but it is gratifying to know that the two million people who have been supplied with chlorinated Thames water since May, 1916, have not complained about the taste of it. Treatment with liquid chlorine of the water on its way from the Staines reservoirs to Sunbury, instead of the old plan of adding bleaching powder at Staines itself, has not only been effective in eliminating the colon bacillus, but has been economical in practice, since it increases the volume of water which can be passed through a filter before it has to be cleaned out. It may be remarked in passing that it costs £40 to clean an acre of filter-bed. But although chlorine has thus come to be accepted by the London water drinker, there have been flavours and colours in the water which have troubled the Water Board. Several years ago the water from the Barnes works acquired a taste euphoniously described in the laboratories as "geranium-like," but more pointedly by the consumers as resembling rotten fish or castor oil. This taste was completely removed by the addition of 2½ to 5 pounds of potassium permanganate to every million gallons of water, the faintly pink tinge of the water soon disappearing, leaving behind only a slight brownish discoloration. The malefactor in this case was the troublesome but harmless tabellaria. A few years previously another harmless growth, oscillaria, developed to such an extent in the filter-beds that they looked as though they had been fouled with green paint; in this case a small dose of copper sulphate proved sufficient to eliminate the mischief.

Chlorination has not, it appears, been such a success in the other sources of London water. In the New River the colon bacillus, after its apparent removal at Crouch End, has reappeared by the time the water leaves the Stoke Newington reservoir and the cause of its reappearance is not yet clear. Of bacterial contamination the presence or absence of the typhoid bacillus is of the first importance, and it is reassuring to find from a long series of experiments with the glucose-bismuth-sulphite-iron medium described by Wilson and Blair, and later by Prof. Wilson at the Public Health Congress in 1928, that Sir Alexander Houston is convinced not only of the value of the medium, but of the practical absence of this organism in 100 c.cm. of raw river water, and by inference in one thousand times that amount of purified water.

THE KING.

IT is satisfactory to learn that during the week following his operation on July 15th the King has made steady progress. The fact that purulent discharge from the abscess has already ceased shows that the measures taken to promote drainage were fully justified and have achieved speedy success. The inconvenience and discomfort of the first few days following any operation are not negligible, but the fact that the King was allowed to sit up for a short period as early as last Monday, and for some hours on Tuesday, shows how little his general health has been disturbed. We are entitled to hope that his complete recovery is now only a matter of time, and that no further interference will be required.

Annotations.

"Ne quid nimis."

THE ROCKEFELLER FOUNDATION: A NEW CHAPTER.

IN 1909 the Rockefeller Sanitary Commission was established for the control of hookworm disease in the United States, and in 1913 the Rockefeller Foundation came into existence, taking over the Sanitary Commission. After 16 years of intense activity entailing the total expenditure of over 144 million dollars the Foundation has opened a new chapter by certain steps of extension and reorganisation.

These changes are recorded in a review for 1928 by the President of the Foundation, George E. Vincent. He describes how during 1928 a conference committee of four Rockefeller boards—the General Education Board, the Rockefeller Foundation, the Laura Spelman Rockefeller Memorial, and the International Education Board—sought ways of bringing the work of these organisations into close and more definitely coöperative relations. In the autumn the committee made a report embodying recommendations which were approved by all the groups, with the understanding that the new régime would take effect at the beginning of 1929. Among the essential features of the reorganisation is the merging of the Laura Spelman Rockefeller Memorial into the Rockefeller Foundation, which will begin as a new corporation. This new Foundation will extend its activities to include not only public health, but the advancement of knowledge in the medical sciences, in the natural sciences (taking over the foreign programme of the International Education Board), in the social sciences (previously administered by the Memorial), and in the humanities. The public health activities will be administered in future through an International Health Division with a group of seven scientific directors and a China Medical Board is to be incorporated, with independent trustees, to which the lands and buildings in Pekin, together with endowment funds and annual appropriations, will be given. The details of this vast amalgamation and reorganisation of resources appear to be fully worked out, and if it is possible to imagine a further extension of the activities of the Rockefeller Foundation such an extension should now take place. To anyone unacquainted with the work done by the Foundation under the glorious motto of "The well-being of mankind throughout the world" a study of the review for 1928 will be illuminating. In one almost breathless sentence in which a full-stop does not occur for nearly two pages, it is announced quite bluntly that the Foundation in 1928 expended over 21 million dollars on some 20 different forms of activity. Each of the 20 headings covers large areas of country and large pieces of work.

A sample of the methods and policy adopted is given in a description of the Lyon Medical Centre. At Lyon the municipal authorities have under construction a large new hospital; the Foundation was asked to coöperate in providing an adequate medical centre for education and research. The first step was to invite the dean with two of his staff and the university architect to visit medical centres in various countries as guests of the Foundation. The commission returned to Lyon, worked out a plan, and as a result of this a medical school building is being erected immediately across the street from the new hospital, while the project also includes an increase in the annual budget to improve teaching facilities and the provision in the hospital of laboratories for the clinical subjects. Towards the cost of this project, to which the Government, the municipality, the university, and private citizens contribute, the Rockefeller Foundation has appropriated or pledged 43 million francs.

HEALTH INSURANCE IN THE IRISH FREE STATE.

THE text of the National Health Insurance Bill recently introduced to the Dail was published last week. The only proposal of any importance in the Bill, writes our Dublin correspondent, is that to abolish county insurance committees and to transfer their functions to the county councils, which will be provided with funds to enable them to perform their increased duties. Certain other proposals tend to simplify the working of the Insurance Acts and to lessen the expense of their administration. The deposit contributors' fund is to be abolished, and members of this fund are to join approved societies within a specified period. The difficulties which have hitherto existed regarding insurable married women are surmounted by giving an insured female a marriage benefit, and providing that if she desires to work after marriage she will be treated as if she had never been insured. The Bill appears to be based on the recommendations of the Committee of Inquiry on National Health Insurance and the Medical Services, but it only touches on a few of the less important of the reforms suggested by that Committee.

AURAL DISEASE AND BATHING.

THE holiday season, which has now arrived, will doubtless be accompanied as usual by trouble—some minor and some serious, in the ears of bathers. Mammals such as the seal, which have reverted to an aquatic life, have a mechanism for closing the auditory meatus, and in some cases the nostrils also, when submerged; but man is not an aquatic animal and does not possess this form of protection. Water can reach the ear and cause damage to it either by way of the external auditory meatus or through the Eustachian tube. When water gets into the external ear it produces a disagreeable sensation, as every swimmer knows, but it runs out again quickly and does no harm in a healthy meatus. If, however, the ear contains much cerumen this imbibes the water, swells up, and blocks the canal. The sensation of "water in the ear," persisting long enough for advice to be sought, is nearly always due to wax, and can be cured by its removal. People with a tendency to excessive secretion of cerumen should have it removed before going to the seaside. This retention of moisture from the presence of wax readily sets up a dermatitis, and is the usual cause of external otitis in bathers, but apart from this people with a tendency to eczema of the meatus are apt to suffer an exacerbation of their trouble from bathing. Unskilful diving may rupture the drum by compression of the air in the canal, but in general the occasional entry of water into the meatus is harmless, as is evident from the comparative rarity of trouble among innumerable bathers. The most important cause of serious ear disease resulting from bathing is the entrance of water into an old, often quiescent, perforation of the drum; this event is liable to cause a very severe suppurative otitis with all its attendant complications. Patients with a perforated drum should never bathe without a really efficient means of preventing the entry of water into the ear. Ordinary cotton-wool is useless for the purpose, and, by giving a false sense of security, becomes a danger; to occlude the meatus a cast of the patient's concha specially made for each case can be obtained from instrument makers, but a plugging material made of a mixture of wool-fibre and plasticine or wax is very satisfactory and is sold by various chemists; a rubber bathing cap to cover the ears should be worn over any plug. Patients with a tendency to aural eczema may with advantage put in at night a few drops of mercuric nitrate ointment, 1 drm. to 1 oz. of equal parts of olive oil and liquid paraffin.

Nevertheless, people with perfectly healthy ears may develop acute otitis media after bathing, and this is caused by the entrance of water into the tympanum through the Eustachian tube. This entrance is favoured by swallowing while under water and, especially, by violent blowing of the nose, while the passages are full of water. It is when virulent micro-organisms are carried into the tympanum with the water that otitis ensues; these organisms may be present in the water, and it is obvious that the water of swimming pools and public baths is more likely to be heavily infected than that of rivers and the open sea. Much care has been devoted to the purification of the water of bathing places, but more attention has been paid, as evidence of contamination, to the intestinal flora of the *Bacillus coli* group, than to the pyogenic organisms which more frequently attack the ears; but it is probable that the swimming bath may play an important part in the spread of streptococcal infections when, for instance in a school, such diseases as tonsillitis or rhinitis are prevalent. Groups of cases, or small epidemics, of infection of the nasal sinuses have occurred under similar circumstances, and probably from the same causation. But micro-organisms can be carried with the water into the ear even when the water of the bathing place is perfectly clean; this occurs when the organisms are already present in the patient's own nose or throat, and is liable to result from bathing during an attack of sore-throat or coryza.

To sum up: Harmful results from bathing are very rare in proportion to the number of bathers; it is necessary to plug the ears only when there is an open perforation of the drum or when the canal is readily irritated by the water; ear complications are unlikely to occur from infection through the Eustachian tube if the bather refrains from swallowing while in the water and particularly from blowing the nose on emerging, and does not bathe at all while suffering from an active cold or sore-throat.

THE PROGRESS OF INDUSTRIAL PHARMACY.

IT would be hard to exaggerate the debt which modern medicine owes to the firms who manufacture the drugs and other preparations nowadays necessary for its practice. A century ago most clinicians and experimenters had to mix their own medicines and solutions; nowadays they can draw upon an arsenal of products compounded with the utmost care and standardised with extreme accuracy. If the activities of manufacturing pharmacists could be taken as a measure of the advance of medical science in modern times, that advance can hardly have been surpassed by any other branch of human activity. The annual special issue of the *Chemist and Druggist*[1] aims at providing a survey of the industry from all its aspects year by year, and should not be missed by anyone with a sense of the importance of this great auxiliary. Great pains have been taken with the reproduction of the many unique photographs. The chief articles in the industry of to-day deal with the manufacture of cotton-wool and lint at the mills of Messrs. Vernon and Co.; solid spirituous preparations, and the cultivation and preparation of the soya bean, a seed of ever-increasing value as a source of vegetable oil, and as a foodstuff. The issue also contains three first-class historical essays. Dr. Charles Singer contributes the second part of his "Sketches in the History of English Medicine," in which he describes the Anglo-Norman Period, and the advent of the learning of Salerno and the Arabs. This is illustrated with a large number of excellent contemporary pictures, including two splendid coloured plates. He gives an interesting quotation from the Prologue to Chaucer's Canterbury Tales; one which perhaps marks the first mention in English of the manufacturing pharmacist: "Full ready had he his apothecaries to send him drugs and his electuaries." Another article describes the pharmacological history of Dublin, where this year's British Pharmaceutical Conference was held, and the history of druggists' weights and measures through

[1] 42, Cannon-street, London, E.C. 2s. 6d.

the ages is set out in an encyclopædic contribution illustrated with 84 photographs. Dr. Giovanni Carbonelli, of the National Medico-Pharmacological Institute in Rome, describes and illustrates the private pharmacy of Pope Alexander VII. The Editors are to be congratulated on an admirable production.

AN INDEX OF RENAL EFFICIENCY.

IT has long been recognised that in certain types of advanced renal disease the ability of the kidney to excrete inorganic phosphates is impaired. In such cases the fall in phosphate excretion is accompanied by a corresponding increase in the concentration of phosphate in the blood and more than one attempt has been made to devise a criterion of renal efficiency based on the rate of elimination of injected phosphates. Working with dogs, Bolliger[1] has given intravenous injections of sodium phosphate solutions, of varying pH, and has found that the normal animal is able to excrete from 80 to 100 per cent. of the amount injected within two hours. After destruction of the major portion of the renal tissue, by exposing one kidney to X rays and ligaturing the opposite ureter, the excretion falls as low as 21 per cent. These results with dogs support the conclusions of R. T. Brain and H. D. Kay,[2] who have used intravenous injections of sodium glycerophosphate as an index of renal efficiency in human nephritis and claim that this test gives more valuable information than either the urea concentration or the phenol sulphonphthalein methods. Sodium glycerophosphate has the advantage over sodium phosphate of greater solubility and does not require adjustment of the pH. Since the acidosis which so often accompanies uræmia has been ascribed to the retention of acid phosphate, the wisdom of injecting phosphate solutions in nephritis may be called into question. Brain and Kay, however, find no ill-effects from glycerophosphate, while Bolliger finds that repeated injections of inorganic phosphate actually have a consistently beneficial effect in "nephritic" dogs, and suggests that similar injections may be of value in human nephritis. An adequate explanation of this anomaly is at present lacking, but Haldane, Wigglesworth and Woodrow have shown that large quantities of phosphate buffers help the kidney to excrete acids. It seems that the prevalent view, that phosphate injections are harmful in nephritis, must be revised and, if clinical trial bears out Bolliger's experimental results, we may find a new therapeutic weapon to delay the progress of nephritis.

THE LEPROUS REACTION.

THE acute phase of leprosy has been the particular study of Dr. Richard Green, who has been in charge of the inmates of the Federal Leper Settlement at Kuala Lumpur, in the Federated Malay States, during the last three years. In a paper communicated to the Royal Society of Tropical Medicine and Hygiene, and published in their transactions (1929, xxii., 367), he notes his conclusions. He finds that the leprous reaction, especially in the so-called second stage of Muir, leads to rapid progress of the disease; rarely, the reaction may be of such severity as to lead to death. This acute phase of the disease may recur from time to time in both treated and untreated cases; it appears, however, to be more frequent in patients undergoing treatment with the oils of hydnocarpus and their derivatives. During the past three years about 20 per cent. of the patients undergoing treatment in Kuala Lumpur have had one or more reactions. The Kuala Lumpur Chinese leper patients appear to know and to fear the occurrence of the reaction. Their recognition of the phase is suggested by their native term for it, which means "the rising up of leprosy." Dr. Green has initiated experiments with intradermal tests, using *B. lepræ* obtained from freshly ground nodules under aseptic conditions, which appear to indicate the presence of specific sensitiveness of the tissues towards *B. lepræ* in cases suffering from leprous lesions, with an absence of this phenomenon in quiescent cases. The evidence collected in the course of his investigations seems to show that the leprous reaction may have its origin as an acquired condition of allergy towards *B. lepræ* in the tissues. This supposition appears to be strengthened by observations on the action of adrenalin, on the analogy of desensitatision in serum sickness and other allergic conditions. The continued administration of ephedrine seems to have little effect on newly formed skin lesions, though a number of patients complaining of nerve pains were given single doses of ephedrine hydrochloride gr. 1, with relief lasting twenty-four hours or more. In the absence of a specific for leprosy, any drug securing relief of pain, even for a short spell, is welcome, but continuous search is being made for one which will give a more prolonged spell of amnesia.

[1] Med. Jour. of Australia, May 18th, p. 650.
[2] Quart. Jour. Med., 1929, p. 203.

IN DEFENCE OF THE R.M.O.

THE lively attack upon the habits, manners, and accomplishments of the resident medical officer, markedly in the special and medium-sized general hospitals, which appears over the signature of "Juno" in the current issue of the *Hospital Gazette* would be more wounding if it was plausibly true to life, while the suggestion that the average house surgeon is discourteous and inconsiderate to the extent that the reputation of the institution he serves is liable to suffer is simply fantastic. The article will, however, have served a useful purpose if it leads to a more sympathetic study of the problem of the young resident. The house surgeon—we include under the term any resident in the institution—by his training, his contact with suffering and the intimate human problems of sickness is usually years in advance of his peers in other realms of activity. In the early twenties he is called upon to shoulder responsibilities and make vital decisions, the parallel of which it is difficult to find in other walks of life. Indeed they are only to be discovered in such callings as that of the young airman pilot, but here the judgments needed are those of rapidity of thought and action, the quick estimate of distance and movement; they are not the decisions which come from long mental deliberation, and the careful sifting of evidence, the true province of the mature intellect. Yet this is what we call upon our youthful house surgeons to do, and any unbiased critic must admit that they acquit themselves with credit. In any body of men there must of necessity be some who lack the tact which is required in dealing with sick persons and their distracted relatives, whose sense of values is often disturbed by the strain to which they are subjected. Yet the average house surgeon realises their disability, and adjusts his conduct to it in a manner which often fills his elders with admiration. "Juno's" criticism reflects not so much indeed upon the character of the average house surgeon as upon the election committee of the institution which is so unhappy in its choice among the ranks of applicants. She complains of trouble that has arisen through negligence or lack of knowledge of the legal responsibilities of a house surgeon, instancing the notification of infectious diseases and other aspects of medical law, and advocates a test of knowledge in regard to these matters before appointment. Now every doctor receives such instruction before qualification, but it would be simple for any institution to call the attention of its officers, say by a small printed pamphlet, to legal obligations, the neglect of which is liable to cause unnecessary work and perhaps friction with the local authorities. Liberality in thought and action is a natural and desirable attribute of youth, but waste would

undoubtedly be diminished by soliciting the collaboration of hospital residents who do not, we feel sure, suffer from the instinctive lack of sympathy and the unhelpful attitude to the general working of the institution with which they are credited. No body of young men work under such circumstances of stress and strain, night and day, for very meagre immediate (or financial) reward, with such loyalty and devotion and efficiency as do the residents of a hospital. Owing to economic factors, and the voluntary system, much of the most responsible and onerous work of hospitals is carried out by newly qualified men and women on the threshold of life. Some of it could be done more tactfully, no doubt, by men of long experience and mature judgment, but such labour costs money, which hospital boards refuse to pay. They now get much of their skilled work done at an absurdly low cost, by an army of young and enthusiastic men, who are learning to add to the knowledge acquired in their academic career the wisdom accumulated through daily contact with sick people, their relatives and attendants. This is the system which, as Mr. Percival Mills pointed out recently,[1] results in the general practitioner being the all-round man he is. It is typically British to give the house surgeon a degree of responsibility which, in a foreign clinic, would only be held by a man of many years' experience. In general, as Mr. Mills said, he responds to this trust extremely well.

THE MEDICAL PROFESSION AND THE MINISTER OF HEALTH.

THE Minister of Health, Mr. Arthur Greenwood, informs us that he proposes to enlarge the very wide range of the various forms of consultation which already subsist between the Minister and the medical profession. This extension of contact between the Government and medical opinion takes shape in the appointment, in a purely personal capacity, of Sir John Rose Bradford, Lord Moynihan of Leeds, Lord Dawson of Penn, and Dr. H. B. Brackenbury, as a small informal committee to confer from time to time with Sir George Newman, the Chief Medical Officer of the Ministry of Health. The object of the conferences will be to give ample opportunity for the committee to place before the Minister their views on any current medical matters about which they desire him to be specially informed, and for the Minister to consult the committee with the same ease.

Mr. Greenwood hopes to find in this arrangement a ready means of communication between the committee and himself as occasion arises, believing that it will contribute to the close, continuous, and sympathetic association which he desires to see maintained between the medical profession and the Minister.

THE LEGAL ASPECTS OF MEDICINE AND DENTISTRY.

A THESIS approved for the degree of doctor of laws in the University of London, recently published in book form,[2] combines considerable research into ancient history with a clear account of the statutes and case law, including the most recent decisions affecting the practice of medicine, dentistry, and veterinary surgery. Treating three cognate professions comparatively, Mr. Bullock is able to underline the differences in the latitude allowed by each to the unqualified practitioner. He does not hesitate to criticise the law which, while conferring a professional monopoly on the registered dental surgeon, allows any unqualified person to treat cancer, epilepsy, or paralysis, among other things. Considering the defects of the Medical Acts, he notices the weakness of the General Medical Council's control over the prospective medical student's preliminary educational tests and over the examining bodies' medical examinations; the Council maintains a register of medical students but cannot compel registration. The conflicting decisions under Section 40 of the Act of 1858 (recently invoked in the proceedings against Lieut.-Colonel Kynaston) are discussed, and a chapter on the law of professional negligence ends in an excellent exposition of the unprotected state of medical practitioners called upon to examine patients under the Lunacy Act machinery. Mr. Bullock is not concerned to deal specially with professional etiquette or to advise upon the day-to-day difficulties encountered by general practitioners. He has approached the subject rather from the legal side, to which his thesis provides a sound and faithful guide.

[1] Queen's Hospital Gazette, February, 1929.

[2] The Law relating to Medical, Dental and Veterinary Practice. By Fred Bullock, LL.D. London: Baillière, Tindall and Cox. 1929. Pp. 317. 12s. 6d.

ÆTIOLOGY OF WHOOPING-COUGH.

THE article by Dr. Sugare and Prof. McLeod which appears on p. 165 of our present issue is a timely reminder how little we know of the causative agent of a prevalent and often devastating disease. Since Bordet and Gengou announced the discovery of *Bacillus pertussis* in 1906, opinion has fluctuated about the exact identity of the organism and its precise relationship to the disease. The actual association with whooping-cough was demonstrated by its discoverers, but subsequent workers have been unable to confirm this, neither have serological studies been of assistance, except, perhaps, to throw doubt on the view that *B. pertussis* is the incitant of whooping-cough. Prof. Bordet's contention is, we understand, that the failure of other workers to confirm his work depends on their not using the correct medium, and that if they were to do so the isolation of *B. pertussis* would present no difficulties. This view is now confirmed by the work done in the Leeds laboratory, in which the bacillus of Bordet and Gengou was isolated in 12 out of 21 cases. Moreover, Sugare and McLeod are able to show that *B. pertussis* is culturally different from *B. influenzæ*, can survive cold much longer, and gives a strong oxidase reaction. Interesting and instructive as these results are it remains to be proved that there is more than an association between this organism and the disease; and there is much to be done before Bordet's views can be accepted. Recent work at M.A.B. hospitals in London has shown a very small percentage of *B. pertussis*, and has failed to show any serological relationship of the organism to the disease. In France, however, Debré, Marie, and Prétet[1] have obtained cultures of *B. pertussis* by exposing plates of Bordet-Gengou medium, made with defibrinated horse blood, in front of the mouth of a patient towards the end of a paroxysm of coughing, and appear to have had no difficulty in isolating the organism after two to three days incubation at 37° C. It was shown by Krumwiede, Mishulow, and Oldenbush in 1923 that there were two types of the organism; serum made from type "B" only slightly agglutinated type "A," whereas type "A" serum agglutinated both organisms equally well. But Debré and his colleagues failed to find any type "A" organisms amongst their strains, whereas all their cultures of *B. pertussis* were agglutinated by type "B" serum. These results show that in Paris at least the strains of the Bordet-Gengou organism isolated from actual cases of whooping-cough were homologous. Leaving open the question of the exact role of *B. pertussis* in whooping-cough, we gather from the work here cited that (1) *B. pertussis* is found in a good proportion of whooping-cough cases; (2) that this organism is distinguishable biologically from *B. influenzæ*; (3) that in Paris all strains isolated were homologous. These results, if meagre, should help to clarify our knowledge of the ætiology of whooping-cough.

[1] Debré, R., Marie, J., and Prétet, H.: Annales de Méd., 1929, xxv., 434.

THE LONDON LOCK HOSPITAL.

A QUESTION asked in the House of Commons on July 22nd elicited the definite statement that the Minister of Health does not propose to publish the reports of the committee of inquiry into the management, administration, and staffing at the London Lock Hospital. The public is asked to be content with the assurance that the drastic revision of the laws and rules of the institution which, according to the Majority Report signed by Sir John Eldon Bankes and Dr. John Fawcett, is imperatively needed, is being made. The new laws passed by the govenors of the hospital on June 6th are not set out in detail in the letter to the Minister of Health from the Board of Management of the hospital, which is included in the incomplete documents now presented to Parliament.[1] The essential administrative changes made appear to be the inclusion of a number of women (amounting to one-third) on an enlarged Board, and the appointment of House and Finance committees with definite duties. The House committee will be responsible for the general supervision of the institution and for constant and regular visitation. The position of women acting on the honorary staff is to be officially recognised, the duties of the registrars defined, and the matron is to have a proper status and free access to the Board. The recommendation that each ward should have a fully trained sister in charge, to be relieved when off duty by a fully trained staff nurse, is met by the statement that each *floor* has a fully trained sister in charge, but that though the Board has tried continuously during the last few months to obtain the services of fully trained nurses, it has not yet been possible to fill all the posts. Meanwhile, the salaries of the nursing staff have been augmented by 10 per cent. and the hours off duty increased. The recommendations in the Minority Report, signed by Mrs. H. J. Tennant, suggest strongly that the amenities hitherto offered to patients in the way of privacy, accommodation, and washing facilities are inadequate for modern requirements. Mrs. Tennant expresses the hope that the adoption of her proposals, which are quite explicit, would entitle the hospital again to be recognised by the London County Council and the Ministry of Health. It will be remembered that the L.C.C. grant to the hospital ceased on March 31st, 1928, so that whereas in 1926 the hospital received the sum of £12,000 from this source, and in 1927 the sum of £10,000, in 1928 the grant was only £2300, and this year so far has been nil. The restoration of the grant would do much towards the re-establishment of public confidence, but the publication in full of both reports would, in our view, do even more. Mr. Neville Chamberlain held (see THE LANCET, 1929, i., 953) that the stipulation of the Board for a *private* inquiry would in any case preclude publication of the evidence taken; but even this difficulty could be surmounted by the goodwill of all parties concerned. Names of individuals mentioned could be withheld, if this were considered desirable. Since vigorous action has been taken to remedy many of the defects in administration which have been disclosed, the decision to withhold the full story need not be criticised on grounds of public policy. But a voluntary hospital, competing with other institutions for support from the charitable public, can only succeed against its rival claimants if enthusiasm can be kindled by reports of the work it is doing and the way it is doing it. Such enthusiasm is not damped by frank exposure of old-fashioned or inadequate organisation, but it is incompatible with a state of uncertainty of the degree to which an institution has been found wanting. The shadow of distrust cast by reflections on internal and domestic management is not cleared by assertions that reforms are being instituted. But in our view distrust would not long survive the publication in full of the reasons which moved the Board of Management to demand an inquiry and of the evidence on which the reports of an impartial committee were based, especially as the documents already available give ample guarantee of the zeal with which a complete reorganisation is being pursued.

[1] Papers as to the Administration of the London Lock Hospital and Home. London: H.M. Stationery Office, 1929. Cmd. 3363. 3*d*.

FROM a field of 150 applicants Dr. J. A. Brincker, Dr. W. Brander, and Dr. W. A. Daley have been chosen to fill the three posts of principal medical officer of the divisions in which the public health department of the London County Council is being organised. Dr. Brincker, who will take charge of the division concerned with infectious diseases, is promoted after many years' service in the department. Dr. Brander, formerly medical superintendent of the hospital belonging to the Hackney Guardians, will take charge of poor-law medical administration, while Dr. Allen Daley, medical officer of health and school medical officer of Kingston-upon-Hull, comes south to take over general public health administration, including housing and school medical service. Ninety-three candidates applied for the post of matron-in-chief to supervise the nursing staff at the hospitals transferred to the Council. From these Miss D. E. Bannon, formerly matron of St. Mary's Hospital, Paddington, has been selected.

Public Health Services.

DEATHS FOLLOWING VACCINATION.

AT the resumed inquest at Stepney on a girl of five, who died on July 11th, it was stated by the medical officer of Mile End Hospital that the child was convalescing from pneumonia when, two days before the time appointed for discharge, another child in the same ward came out with a small-pox rash and all the contacts were vaccinated, so far as the parents' consent could be obtained. Vaccination was done with Government lymph on June 25th; on July 9th the child's temperature rose to 100° F., after being very excitable on the previous evening; drowsiness and headache followed, with increasing stupor ending fatally on the 11th. One other child was vaccinated with the same lymph. Dr. D. L. Thomas, medical officer of health for Stepney, said that this was the first case of encephalitis following vaccination reported in the borough. During the present year 285 cases of small-pox had been reported with two deaths, and 10,000 vaccinations had been done by public vaccinators. Mr. R. L. Guthrie, the Coroner, recorded a verdict of death by misadventure, adding that there was a certain risk from vaccination which doctors did not recognise until recently.

A boy of 12, whose father had objected to his vaccination in infancy, was vaccinated on July 3rd, since this was a condition of his participation in a holiday. His arm was in a satisfactory condition when examined a week later. On July 17th he became drowsy; he was taken to Poplar Hospital on July 18th and did not recover consciousness before he died. The inquest opened by the East London coroner on July 22nd was adjourned until July 26th for further medical evidence.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 13TH, 1929.

Notifications.—The following cases of infectious diseases were notified during the week:—Small-pox 115 (last week 153); scarlet fever, 1971; diphtheria, 1012; enteric fever, 58; pneumonia, 942; puerperal fever, 40; puerperal pyrexia, 80; cerebro-spinal fever, 13; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 20; dysentery, 16; ophthalmia neonatorum, 145. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on July 16th–17th was as follows:—Small-pox, 198 under treatment, 11 under observation (last week 209 and 6 respectively); scarlet fever, 1364; diphtheria, 1652; enteric fever, 10; measles, 261; whooping-cough, 410; puerperal fever, 29 (plus 11 babies); encephalitis lethargica, 125; "other diseases," 30. At St. Margaret's Hospital there were 18 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from small-pox, 1 (0) from enteric fever, 37 (6) from measles, 4 (2) from scarlet fever, 27 (7) from whooping-cough, 22 (8) from diphtheria, 32 (8) from diarrhœa and enteritis under two years, and 27 (3) from influenza. The figures in parentheses are those for London itself.

The two deaths provisionally classified to small-pox were assigned to Stepney and Willesden. Liverpool reported 4 deaths from measles; Bootle, Bradford, and Tynemouth each 3. Liverpool also reported 3 deaths from whooping-cough; Bradford 3 from diphtheria. The highest figure for deaths from diarrhœa comes from Birmingham, 5; Liverpool following with 4, and Leeds with 3.

The number of stillbirths reported during the week was 281 (corresponding to a rate of 40 per thousand births), including 46 in London.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXCVI.—THE TREATMENT OF STERILITY IN WOMEN.

PART II.—LOCAL MEASURES.[1]

THE methods of examination discussed last week may show some generalised condition of the pelvic tract, a general under-development or inflammation, or a gross lesion such as multiple fibroids with chronic inflammatory degeneration of the tubes and ovaries. One or more of the following conditions may call for treatment.

Intact or Painful Hymen.

Quite apart from vaginismus, the amount of obstruction caused by the hymen is relative and has to be treated on this basis. Comfort and confidence must be assured to the patient. In dealing with minor trouble the passage of vaginal dilators may be sufficient, but in my experience it is usually worth the patient's while to undergo operative measures under anæsthesia. The hymen is incised to its base in the mid-line posteriorly and the tips of two fingers of the left hand introduced to stretch the orifice to the required extent, the musculature at the base of the hymen being nipped meanwhile until sufficient room is obtained. The remains of the hymen are then removed, and the diamond-shaped space produced by the incision is sutured from its upper to its lower limit. Sometimes a large vaginal dilator is left in situ for some hours. The patient need not be kept in bed for more than two or three days. At the end of a fortnight a very important part of the treatment is performed. A series of vaginal dilators is passed not so much to dilate the parts as to prove to the patient what can be achieved without pain.

Vaginal causes of sterility are comparatively infrequent. Malformations and narrowings occur, and must be treated when they are considered to be factors in the prevention of conception.

Malposition or Abnormality of the Cervix.

The position and health of the cervix are of the first importance. If, as already indicated, the spermatic fluid is deposited elsewhere than on the cervix, its rapid deterioration, due to the acid reaction of the vagina, is assured. Malposition of the cervix occurs most frequently in association with retroflexion, when its position is always forward. The condition of retroflexion of the uterus may be directly associated with a further cause for sterility, kinking of the tubes, and tends to be associated with their further degeneration. Retroflexion is a frequent cause of secondary sterility. When a retroflexion appears to be the cause of sterility, if it is otherwise symptomless and the uterus and appendages are free from any suspicion of adhesions, the simplest treatment, well worth while before operative measures are suggested, is readjustment of the position with a sound and the insertion of a Hodge pessary. This can be done in many cases without anæsthesia. It is best to introduce the sound, with the help of speculum and volsellum, while the patient lies on her back, manipulate the uterus into its right position, and then turn the patient into the knee-elbow position before removing the sound and introducing the pessary. Air pressure maintains the uterus in its new position until the Hodge is suitably placed. The pessary can remain in situ for three to four months without douching, and must be retained for three to four months after pregnancy has occurred. I have no faith in the method often practised of "pushing up" the uterus or adjusting it bimanually without anæsthesia and without a pessary, as giving anything but the most temporary relief. I have, however, known the uterus to retain an improved position after such treatment long enough for pregnancy to occur.

If the uterus is fixed in retroflexion (in which case there are adhesions also of the tubes and ovaries), or persists in falling back in spite of the support given by a Hodge pessary, abdominal operation must be resorted to. It is not always easy to be sure whether or not a uterus is fixed. If adhesions are of old standing there may be no tenderness, though movement of the cervix from side to side usually elicits pain; on the other hand, the retroflexed body without adhesions may be very sensitive from congestion.

Acute anteflexion also results in a bad position of the cervix. It lies forward and points forward and is often poorly developed. Dilatation is indicated with the use of a uterine stem, which should allow of drainage, for a few days. These cases are less satisfactory to treat than are retroflexions. A long, pointed cervix may need dilatation and partial amputation.

A normal cervix with pin-hole os may need dilatation. Apart from this, the operation of dilatation of the cervix with or without curettage, according to the condition of the uterine body, gives good results in many cases for no obvious reason. The opportunity should always be taken to test the patency of the tubes under the same anæsthetic. If curettage is considered necessary, it should be done after the insufflation. Further, the cervix may have been pushed completely out of place by pelvic tumours or dragged out of place by scarring from old tears.

Any lesion involving the health of the cervix must be dealt with. Cervicitis may be present, following infection by gonococcus or other septic cocci, or lacerations may be associated with erosion. It is true that pregnancy may occur in spite of such lesions, but any lesion that interferes with the normal alkaline reaction of the cervical canal or alters the normal mucous secretion to pus is a definite obstacle to penetration of spermatozoa into the uterus. The fact that the methods of treatment advocated for cervicitis and erosions are so numerous is an index of the difficulty of curing these conditions. For success are needed patience, persistence and variation of the methods adopted, rest if possible in the early stages of treatment, and security from risk of further infection.

Uterine Body.—Inflammatory changes in the mucosa and fibroids of the submucous type are potent causes of sterility. Given normal tubes, myomectomy may give positive results, sometimes even when the uterus is considerably distorted by the operation.

[1] Part I. appeared last week.

Blockage of the Fallopian Tubes.

Treatment of the tubes is of value, varying with the site of the lesion. If there is blockage of the fimbriated extremity, which can be released, the prognosis is good. Hence, from the point of view of sterility, in all acute inflammations of the tubes it is important to operate as soon as possible after the temperature has finally settled at normal. Then one finds the tubes closed by adhesions, easily separable, to the back of the broad ligament or the pouch of Douglas. One or both tubes can often be saved by separating them carefully, opening up the fimbriæ, milking out the pus, and lifting the tubes with the uterus, which often needs suspension. I have been astonished at the number of patients who have become pregnant after such treatment. If an artificial opening must be made in a tube permanently blocked at the fimbriated extremity, it is important to evert the edges, exposing as little raw surface as possible, and leaving a strand of catgut through the new opening. There is reasonable hope of pregnancy ensuing in these cases. Where obstruction exists at the uterine end of the tube the prognosis is bad, though some surgeons have achieved success even here.

Ovarian Dysfunction.

Ovarian function is manifold and by no means completely understood. Where gross lesions exist, associated with sterility, their surgical treatment has sometimes resulted in pregnancy. When underdevelopment is suspected, from evidence of irregular, infrequent, and scanty menstruation or adiposity, gland products containing thyroid, anterior pituitary and ovarian substance are indicated, although it is very doubtful whether the two last-named extracts have any action unless they are injected hypodermically. Injections of the female sex hormone, prepared commercially from the placenta and standardised as "estrogen" are under trial. The great objection to this line of treatment is the number of intramuscular injections which have to be given to produce results. Small doses of X rays to the ovaries have given good results. The average dosage is 10 per cent. of the skin erythema dose, and is usually repeated two or three times. Menstruation has appeared where amenorrhœa existed, increased frequency and loss in cases of oligo-menorrhœa, each being followed by pregnancy after a short interval.

Treatment by Artificial Insemination.

This is only indicated or likely to give good results when there is impotence on the side of the male partner, his semen being healthy, and when the wife is normal. It may also be tried with hope of success in those cases where, the husband being normal, repeated post-coital examination shows no living spermatozoa on the cervix. It is important to choose the time of greatest fertility, to obtain a condom specimen under conditions as normal as possible, to retain the temperature of the specimen, and to inject as soon after emission as possible. In cases of impotence injection on to the cervix may be sufficient; otherwise a few drops of semen should be injected at low pressure into the uterine cavity. In any case, it is likely that repeated injections will have to be made.

Conclusion.

There still remain numbers of sterile marriages, where no treatment can be defined with confidence because the cause is so obscure. If a full investigation has been made, the cervix has already been dilated in association with insufflation. Attention should be paid to the general health of both man and wife, and advice given on change of scene, temporary abstinence, or any other detail suggested by the history of the individual case.

FRANCES M. HUXLEY, M.D., Ch.B. Manch.,
Surgeon to the South London Hospital for Women.

Special Articles.

PHYSIOLOGY—THE BASIS OF TREATMENT.*

BY PROF. W. E. DIXON, F.R.S.

The Omission of Treatment from Text-books of Medicine.

WHEN the sciences of physiology and pathology a century ago passed from the realms of natural history to deduction and experiment, they naturally attracted the more original and eager minds in medicines, and the text of the writings of the nineteenth century deals with changes in structure and function. Treatment became neglected, the old shibboleths and rituals of treatment which had held sway for centuries were discarded, and there was nothing with which to replace them.

In the middle of the last century S. Skoda and K. Rokitansky (in Austria) perfected a system of physical diagnosis which has had a practical bearing on medicine ever since. Skoda made many experiments with drugs on the patient without any expectation of producing benefit; the patients were not improved and Skoda thought it mattered little how the patient was treated. It is right to say, however, that these experiments were deficient in many respects according to modern views. At this period the Vienna School held a prominent position in scientific medicine and the new doctrine rapidly spread. The physician studied disease in the patient: its beginnings, its progress, its effects, and the scars it left, as shown at autopsy. Scientific medicine looked askance at treatment; text-books spent many pages in describing the symptoms, diagnosis, and pathology of disease, but two or three lines dismissed the treatment; and even in our times the "scientific" physician is apt to be a diagnostician rather than a healer. The study of disease as an entity was the object aimed at, and a complete case was one which went to autopsy. That most admirable and popular text-book of medicine by the late Sir William Osler was typical of the text-books of the time. Dr. Simon Flexner once told me that Osler's book, characterised by its almost complete lack of indications for treatment, was largely responsible for the Rockefeller millions given to medicine. The text-books of the period told with considerable precision what was happening in the body during disease and what was likely to happen, but little or nothing on prevention.

This state of affairs was unavoidable; there was no specific treatment, there was no science of treatment, for such a science could only come into existence when physiology and pathology had reached some degree of precision. Diagnosis was then and is now far ahead of treatment; diagnosis is often accurate where there is no satisfactory treatment and yet diagnosis is only a means to the end.

[Prof. Dixon explained that the science of pharmacology was comparatively new, being the climax of physiology and pathology devised to subserve a practical end. He gave his reasons for depreciating the study of physiology only from the aspect of chemistry and physics. He said:—]

The Deflection of Physiology from Medicine.

I am by no means averse from the vast amount of academic research on these lines which is published annually, often by workers with little biological knowledge or training, but it surely should not precede the more immediate practical aspects of the subject. The modern attitude is expressed by a distinguished young biochemist who, in reviewing a well-known book on chemotherapy in 1928, asks "Might not the time and resources spent on chemotherapeutic research be diverted more profitably to the study of chemical and physical mechanism?" The same attitude is reflected in the awards of Fellowships and Scholarships for Medical Research. Formerly all the recipients were primarily biologists

* Part of the Presidential Address delivered to the Section of Physiology of the British Association for the Advancement of Science at Capetown on July 24th.

with a medical training: now a medico-biological training is unusual. Physiology in the broad sense in which it was used by Claude Bernard and Huxley has given place to a new physiology of physico-chemical reactions: I might go beyond this and say that physiology is getting further and further from practical medicine, and this is the more regrettable as most of the Chairs in Physiology are connected with the Medical Schools and because the science of treatment is largely dependent on experimental physiology. Prof. J. S. Haldane clearly had this in mind in 1923 when he wrote: "We may say without serious misrepresentation that the official present-day view of physiologists is that physiology . . . aims at investigating the physics and chemistry of life, and might properly be called biophysics and biochemistry."

[Prof. Dixon deplored the fact that biology had lost ground as an educational subject in the last twenty years, and urged that renewed attention should be paid to this science and also to pharmacology. He proceeded:—]

The Neglect of Pharmacology.

No branch of experimental biology has received less consideration in Great Britain than that of pharmacology; it is also the most neglected branch of medicine. And although the object of medicine is the healing of the sick, it is amazing that medical schools in Britain, often equipped with all other modern laboratories, lack departments of therapeutics. I was once asked at a meeting, by a leading medical man, what has pharmacology ever done? The answer is, of course, that it has formulated and brought reason and knowledge into treatment of the sick; so much did it impress that great pathologist, Ehrlich, that he left his sera and turned his attention to drugs, and with the unlimited resources at his disposal gave the world, amongst other drugs, salvarsan: so much did it impress the brilliant French chemist, Mr. Fourneau, that he has confined his studies to those of drugs, a study which has resulted in the synthesis of many valuable arsenical compounds and dyes. In America many centres, including the Rockefeller Institute, have turned to the study of drugs; and Italian pharmacology is doing the same.

Stereotyped Prescriptions.

I have heard it said by a leading official of our Ministry of Health, speaking to panel practitioners, that they, in the Ministry, do not want stereotyped prescribing in treatment. Surely there was never such nonsense. If there is a best treatment, let us have it whether it is stereotyped or not. In this respect the British Medical Association has given the profession a lead and shown by the experience of a great number of doctors that there is a best way of treating varicose ulcer in which the patient gets well quicker than by other ways, an advantage both to the patient and to the community who have to keep him whilst he is unfit for work.

Separate Physicians for Diagnosis and for Treatment.

The British physician is a skilled diagnostician and is in the forefront in all that pertains to this subject. The literature is so extensive that it is impossible for the average clinician to do more than this. But how few of them do, or perhaps the more correct word is "can," occupy the same time in the study of recent advances in general therapeutics? The successful physician has, generally speaking, to be content with such references to treatment as are to be found in clinical reading. The general physician must always be a necessity for diagnosis; but the details of treatment of patients will, I believe, in the future be handed over to those who have made a special study of the treatment of that particular group of diseases from one of which the patient is suffering. This is already the position in tuberculosis.

Experimental Methods in Therapeutics.

But the advent of institutions for experimental therapeutics is upon us, though Britain has taken little part in the movement. In this connexion we welcome the magnificent buildings of the University of Cape-town, and when the new hospital with its medical school is completed I confidently anticipate that adequate accommodation will be provided for that important branch of applied physiology, pharmacology, and that this will include laboratories of physiology and organic chemistry, which must be in close and direct association with the wards. The enormous importance of one branch of treatment to Africa, chemotherapy, I will refer to later. From what has been said, it is not surprising that British pharmacology should be so much behind that of other countries in the production of new curative remedies; practically all come from abroad; I may mention ephedrine for spasmodic asthma, liver extract for pernicious anæmia, insulin, the organic arsenicals, the dyes such as 205, the new anæsthetics local and general, hypnotics, and many others.

Fallacies in Experiments on Healthy Men.

It has been often stated that the action of remedies may be best determined by experimenting with them on healthy men. This is not true; quinine is used to treat malaria, yet not one of the subjective symptoms induced in man has the remotest connexion with its curative properties. The same is true of the use of the iodides in syphilis and salicylates in rheumatism. The experiments of Joig and his pupils in 1825 with camphor, digitalis, and other drugs on healthy men added nothing of value to pharmacology. Subjective sensations are, it is true, produced which are erroneously attributed to the drug which has been taken. The late Dr. Rivers and myself were nearly the dupes of such an experiment which I will give in full because it illustrates the imaginary sensations and effects produced by S. Hahnemann and his pupils, by Perkin with his retractors, and by more modern physicians with their mystic apparatus.

Our experiments were made on healthy men under a regular régime as regarded sleep, exercise, and diet. The men were practised with the use of the ergograph during several weeks at the same hour daily, until their output of work was constant. We found that the administration of a dose of caffeine dissolved in water one hour before the experiment greatly increased the output of work for that day. This was repeated on several occasions, always with the same result, and we naturally regarded the effect as due to the caffeine. This, however, was not the case: the effect was due to the ritual of taking a drug; the drug day assumed an enhanced importance in the mind of the operator and the mental effect sometimes referred to as suggestion was principally responsible. We had no difficulty in showing that water made bitter with a trace of quassia or other simple bitter had a similar effect.

Few, if any, experiments made on man without the most careful controls are of any real value. Properly controlled experiments have been made, however, with many substances. Precise experiments, for example, have been made both in Germany and America with bromides in epilepsy. In these experiments half the epileptics were given potassium chloride and the other half sodium bromide; after several weeks' use the bromide had decreased the number of attacks, whilst the chloride had no distinct action.

[Prof. Dixon discussed the applications of chemotherapy in parasitic diseases and described recent preparations of the ductless glands in disorders of the endocrine system. He then spoke of civilisation as leading to an exaggerated nervous sensibility, which was a much commoner feature in those engaged in a mental indoor life than in those engaged in an outdoor physical life. He drew attention to the effect of tobacco in diminishing nervous sensibility and to the circumstance that though beer was a soothing beverage, and caffeine was a stimulating one, it was the supersensitive people who drunk caffeine and not beer in excess. It seemed to him not unlikely that this substitution of tea for beer was not wholly unconnected with the tendency of highly civilised nations to become supersensitive and neurotic, for this was the groundwork upon which drug addiction was built. He concluded:—]

I have endeavoured to show that all precise know-

ledge in therapeutics is based upon controlled experiments on animals or man, and that the elucidation of the action of medicaments by the methods and data of experimental physiology is one of the most important steps taken to place medicine on a scientific basis. How important this is may be gauged from the fact that all fundamental advances in treatment in the last 30 years have originated directly or indirectly from experiments on animals. There can be no doubt then that the future of therapeutics, and therefore of medicine as a whole, is intimately connected with physiology; there can be no doubt that advance in the practice of medicine is dependent on those trained in the methods and fundamental truths of physiology, who devote themselves in the ward and biological laboratory to investigating how best to prevent or cure disease and so relieve suffering. Britain for 50 years has every reason to be proud of her progress and achievements in physiology; it is acknowledged that she can show records second to none and that her savants have included some of the world's greatest investigators. It remains for us to hope that in the future she may attain equal success in the associated sciences directly concerned with the relief of suffering and cure of disease.

MENTAL HOSPITALS ASSOCIATION.

THE eleventh annual meeting of this Association was held on July 17th, with Alderman Sir WILLIAM HODGSON (Cheshire) in the chair. The Chairman, in the course of his address, referred to the difficulty of suggesting new legislation at a time of political crisis, but declared that the problems of lunacy and mental deficiency were above party and truly national. Some of the suggestions of the Royal Commission might be taken as sure of general acceptance and would supply urgent needs. He referred to the paramount importance of treatment for incipient mental disorder without certification, and suggested that a conference of local authorities should be called to consider the greatly overdue Lunacy Bill, which would meet with general support if formed on enabling rather than compulsory lines. It was most desirable that the Government should realise that the spirit of local government must be protected from excessive arbitrary interference by central officials. The Association's advance in strength and influence had been based upon steady insistence on efforts to gather information and on the absence of any interference with the absolute autonomy of visiting committees. Organisation for mutual helpfulness was the keynote of their work, which was too humanitarian for isolation or personal or political preference.

The first business on the agenda was an expression of regret that another year had passed without legislation to reform the lunacy laws. The Committee hoped to see a Bill introduced very soon, and the meeting cordially endorsed this hope.

The Committee drew attention to the serious shortage of accommodation and the prohibitive cost of building. Councillor W. M. CLARK (Durham) said that Durham had saved £3000 on an outside estimate by utilising material and labour available within the institution, but Councillor HOPKIN (Nottingham) pointed out the objections which the trades-unions would raise if this plan were widely followed. He thought there was no hope of obtaining the required accommodation in reconstituted poor-law hospitals, because the institutions were needed for old age pensioners unable to live at home on their pensions. If they could be helped to live outside, the beds they occupied might become available for mental cases. Alderman E. H. MOLE (Glamorgan) pointed out that this might be true in industrial areas, but agreed with Alderman R. BRUFORD that the problem of accommodation in other areas would solve itself when one authority was responsible both for poor-law and mental hospital work.

The Mental Nurses' Examination.

This vexed problem again came up for consideration, and an acute difference of opinion became manifest. For thirty years the examination and certification of mental nurses was in the hands of the Medico-Psychological Association, and the syllabus was drawn up by medical superintendents with reference to the special needs of the work they control. With the incorporation of the General Nursing Council a difficult situation arose. As Dr. G. H. GRILLS expressed it in proposing a motion, the G.N.C. did not want the advice of medical superintendents, and would not have it, and in his opinion most medical superintendents found the syllabus proposed by the Council quite impracticable. His motion was:—

> That this meeting views with some apprehension the existing unsatisfactory conditions regarding the national registration of mental nurses, and urges the General Nursing Council for England and Wales to provide that the possession of the certificate of proficiency in mental nursing awarded by the Royal Medico-Psychological Association shall entitle the holder thereof to be registered, on payment of the fees, in the mental section of the register of nurses of the General Nursing Council.

He pleaded strongly the difficulty of sparing nurses from a mental hospital to go to a distant centre for examination, and of their finding the money for fares and lodgings, as well as the five-guinea fee, and declared that a first-year probationer trained on M.P.A. lines was more use in a mental hospital than a fully registered general nurse. She must acquire in her first year an elementary knowledge of mental nursing and of first-aid, or she was useless in the wards; the G.N.C. syllabus postponed these subjects to the final examination. It was impossible, he thought, to have a single portal of entry for every kind of special nurse. Not more than two mental hospitals in England and Wales made the G.N.C. examination compulsory, and soon there would not be a single registered nurse in the mental hospital service, which would be a serious situation.

On the other hand, Dr. J. I. RUSSELL (N. Riding, Yorks.) and Dr. J. F. FRANCIS (Leicester), supported by Dr. D. RICE (Norwich) and Dr. R. EAGER (Devon), took the attitude that the position must be accepted and some compromise found by the medical superintendents. The General Nursing Council, they argued, was a statutory body, and its formation had undoubtedly been a forward step. It had now decided finally that it would not delegate its powers to any voluntary body, and that it regarded control of examinations as a part of its duties. This being so, its examination was the legal one and must be accepted sooner or later, and the medical superintendents were, in a sense, deceiving their probationers by encouraging them to take another diploma and dismissing them if they did not. Dr. FRANCIS said his committee had recognised the inevitability of the situation, and had given up training for the M.P.A. certificate. The examination fee was repaid by the bonus given to the nurses who had passed the examination. He had found no insuperable difficulty in teaching the requisite special subjects during the first year while training probationers for the G.N.C. examination, or in sending the nurses to the examination centre. He suggested that the M.P.A. might organise a higher special examination, to be taken by mental nurses after registration. Finally, it was decided to refer the matter to the executive Committee for consideration and report.

Other matters briefly discussed included the degree of control of mental hospital finance which should be exercised by the local authority; the degree of control that should be exercised over minor items in the uniform dress of members of mental hospitals' staffs; the facilitation of removal of patients to mental hospitals near their homes or relatives; and the reduction of railway fares for relatives visiting patients in mental hospitals. Alderman R. BRUFORD (Somerset and Bath) was elected chairman, and

Alderman W. E. LOVSEY (Birmingham) vice-chairman, and Alderman C. HORNBY (Lancs) was reappointed hon. treasurer for the ensuing year. The Committee was re-elected, with the addition of the retiring chairman, of Miss BRISCOE of Fulham, and of Councillor GEORGE HUNT of Leicester.

The Salaries of Medical Officers.

During the morning the meeting went into committee to discuss a memorandum on the salaries of whole-time medical officers, which was accepted and confirmed. This scale of salaries was the outcome of a conference held at the Ministry of Health between representatives of the County Councils Association, the Association of Municipal Corporations, the Urban District Councils Association, the Rural District Councils Association, the London County Council, the Association of Education Committees, the Mental Hospitals Association, the Metropolitan Boroughs standing joint committee, and the British Medical Association. Briefly, the annual salaries agreed upon are as follows:—

Officer	Minimum commencing salary	Annual increment	Maximum	Emoluments
Resident medical officers and assistant M.O.'s. in mental hospitals	£350	£25	£450	Board, lodging, laundry, and attendance
Medical officers with at least 3 years' post-graduate experience ..	£500	£25	£700	
Senior medical officers—i.e., those in charge of services or departments ..	£750–£1100†	£50 every 2nd year	£1100	
Medical superintendents (excluding mental hospitals)—i.e., institutions with more than 100 beds	£750–£1100‡	£50 every 2nd year	£1100	included in salary
Medical officers of health*	£800–£1800‖			

* Assistant M.O.H.'s 60 per cent of this scale.
† According to responsibility and scope. ‡ An additional £50 for each 100 beds over 200. ‖ According to population.

After an office has been held at the maximum salary for four years, the employing authority is to consider whether the officer's remuneration should be increased beyond the maximum. The scale is not to apply to posts limited to a term of one year, or to officers without previous professional experience. There is to be no differentiation of salary on account of sex, and any intention to dismiss on marriage should be specifically stated in the advertisement. The memorandum mentions the desirability of providing married quarters for assistant medical officers in mental hospitals, and of allowing at least four weeks' annual leave. An additional £50 per annum is recommended for officers who hold the Diploma in Psychological Medicine. Only the first annual increment is to be allowed to officers who, in the opinion of their medical superintendent, do not take advantage of the opportunities offered them for obtaining the diploma. Temporary medical officers should not ordinarily be employed, the conference advised, for more than twelve months, and clinical assistants should not be appointed to undertake the duties of junior medical officers. An advisory committee is to be constituted to deal with any difficulties arising out of the working of this agreement, which is to come into force on April 1st, 1930, and to remain in force for five years, and thereafter from year to year, subject to one year's notice from any of the contracting parties. These recommendations meet, in practically every respect, the requirements of the British Medical Association, out of which the conference arose in the first place.

MEDICINE AND THE LAW.

Shewry v. Maybury.

THE lengthy litigation in the case of Shewry *v.* Maybury has ended in a manner satisfactory neither to plaintiff nor defendant, and presumably satisfactory neither to judge nor jury. The special jury, it will be remembered, after a trial lasting a week, failed to agree on the question whether the condition of the infant (Leslie Shewry) was caused by Dr. Maybury's treatment. The jury had agreed in its answers to a string of other questions already summarised in these columns,[1] and on July 9th Dr. Maybury's counsel asked that judgment might be entered for him since the plaintiff had failed to establish his case. The point at this stage for the Lord Chief Justice to decide was not how he would himself have answered the question on which the jury disagreed. Had that been his duty, Lord Hewart would, he said, have answered in Dr. Maybury's favour. The point he had to decide was whether or not there had been evidence to go to the jury upon which the jury might have answered the question in the opposite way. Lord Hewart, therefore, reserved judgment in order to give himself the opportunity of carefully re-reading the whole of the evidence; eventually (on July 19th) he gave his considered decision. He decided that, notwithstanding his own personal view, he would not have been entitled at the original trial to rule that there was no case to go to the jury. He would not have been entitled to direct the jury to find a verdict for the defendant. "There was, I think, some evidence, including some medical evidence, which, if the jury were prevailed on to accept it, was sufficient to entitle them to answer affirmatively the question 'was the condition of this infant caused by the treatment administered by the defendant?' . . . It may well be that, in view of the intrinsic nature of that evidence, and of the contrast between it and the cogent evidence adduced on behalf of the defendant, such an answer would have excited legitimate surprise. But all such considerations appear to me to be quite irrelevant if, in fact, there was a conflict of evidence for the jury to determine. Here, I think, there was such a conflict, and the jury having disagreed, it is not possible for me to enter judgment."

The result is that, notwithstanding that the Lord Chief Justice has now on two occasions made known his opinion that on the merits of the evidence the verdict should be in favour of Dr. Maybury, the disagreement of the jury upon a fundamental question vitiates the patient trial before Lord Hewart and leaves the plaintiff at liberty to start his action afresh. If this latter course is taken, twelve laymen will once more be selected to decide a technical issue; plaintiff's counsel will once more seek to inflame their natural sympathies by a terrible story of a healthy baby subjected soon after birth to unnecessary and improper treatment resulting in incurable mental deficiency and epilepsy; expert witnesses will once more come forward to say that whatever a medical practitioner decided to do nine years ago was wrong though he saw the patient at the time and they did not; "cogent" evidence will be given again on Dr. Maybury's behalf that he was right, and finally the jury will be expected to reach the mediæval standard of unanimity in the face of a puzzling series of questions framed by the judge with an eye to possible legal arguments in the Court of Appeal. The death of the child is the only new fact to be considered upon a re-hearing, and, unless there is a post-mortem examination, this fact may be without significance. Nothing, it is agreed on all sides, could have been more lucid or impartial than the Lord Chief Justice's summing up. But, as he has himself explained in his judgment, a judge cannot be placed in the position of a jury; unless he found himself able to declare that a verdict by the jury against Dr. Maybury was impossible he cannot supply the

[1] See THE LANCET, 1929, i., 1375.

deficiency which the jury's disagreement has caused. Comparison between the judicial faculties of judge and jury is otiose—on the one side a man expert in the knowledge and application of the law, familiar with previous actions depending upon allegations of negligence, and trained to weigh evidence and exclude irrelevancies; on the other side twelve casually chosen laymen who have none of such gifts. The Lord Chief Justice, it must be reiterated, has twice declared that, had he had the power, he would have decided in Dr. Maybury's favour; the jury has not been able to decide unanimously against Dr. Maybury. No recent case has so flagrantly exhibited the occasional discrepancy between a judge's and a jury's view of identical facts, or the disadvantage of leaving technical issues (affecting a defendant's professional reputation and livelihood) to a jury of laymen. It will stimulate and justify the demand for some other form of tribunal. The use of medical assessors would at least abbreviate the length of such a trial. In any case it would seem reasonable that there should be some form of protection for a medical practitioner against charges of negligence relating to treatment given as much as eight years ago.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Medical Curriculum.

ON Thursday, July 18th, the graduation proceedings took place in connexion with Edinburgh University; the ceremonies were held in the M'Ewan Hall, and Prof. J. T. Mackie, Professor of Bacteriology in the University, delivered an address to the new graduates in which he outlined the defaults of the system, of which they were the most recent victims. Once again the curriculum was indicted as over-loaded—in Prof. Mackie's eyes it "resembled a building originally compact, extended in the course of time by new storeys and annexes, always commodious, but tending to become somewhat rambling, and—worse still—top-heavy on its foundations." Accordingly he concludes that "the time has perhaps come when it should be razed to the ground, and rebuilt on a new plan." He followed this expression of policy, which must be regarded as summary when applied to the outcome of (say) seventy-five years of developments, by stating that, while the study of medicine might be regarded as that of a great branch of biology, so that medical workers might be expected to furnish the world with supreme biologists, the graduated approach between biological studies and the minutiæ of anatomy and physiology was wanting in the curriculum, which, in this place therefore was irrational. Is this a weakness in the curriculum which can be met by extension of time? Or can it be met by an alteration of the examinational system, by which certain subjects, or the developments of certain subjects, are relegated to post-graduate work? Or, without altering the time of the medical course proper, can pre-medical studies be framed so as to lighten subsequent studies, while being available for the mass of students? Prof. Maekie, in his comprehensive survey of medical education, did not ask precisely those questions, but they are the questions which have to be faced, and towards a reply he made the suggestion that, on the analogy of the honours degrees in other Faculties, the University graduate in medicine might be able to take a pass or an honours degree.

Cowan House, Edinburgh.

A further £20,000 has been presented to the University of Edinburgh by Mr. Thomas Cowan primarily for scholarships to promote the entry of students of small means as residents into Cowan House. This House, which is now nearing completion, is designed to be a social centre for male students of British extraction, and to attract as residents young men who, in respect of intellectual force or other personal characteristics, are likely to have a useful influence on their fellow-students and to become a credit to the University.

Since it is difficult to foresee how far the provision of scholarships may be necessary or desirable, Dr. Cowan is leaving the University full powers to apply the fund in any other way that will develop the usefulness of Cowan House.

Housing Conditions in Edinburgh.

Since the inauguration 30 years ago of a Sanitary Department in Edinburgh over 5000 uninhabitable houses have been closed. The housing policy of the Corporation is now making good progress in the abolition of the slums by means of improvement schemes and the re-housing of the occupiers in more congenial and hygienic surroundings. At the end of 1928, 1034 houses had been inspected under the Housing Regulations (Scotland) 1928, and of that number 971 were considered to be in a state so dangerous or injurious to health as to be unfit for human habitation. In connexion with 57 houses closing orders were made. A reduction in overcrowding was reported. In the last three years the number of cases of overcrowding brought to the notice of the Department has fallen from 1640 in 1926 to 1542 in 1927, and 1323 in 1928. In 146 cases the overcrowding was due to or aggravated by the keeping of lodgers or the sub-letting of rooms. In the one-apartment overcrowded houses as many as 8 to 11 persons were found in residence, and in the two-and three-apartment houses as many as 10, and in one case 19, persons were found.

Animal Diseases.

At the annual meeting of the Animal Diseases Research Association of Scotland, held at the Moredun Institute, Gilmerton, a year of progressive work was reported. The Association now possess a well-equipped Institute with facilities for all kinds of research, but the lack of trained observers is still felt; there is, for example, urgent need for a clinician on the staff of the Association. As lamb dysentery can now be controlled, its general nature being understood, it has been possible to cease intensive work on it and take up louping-ill and the braxy-like diseases of sheep. Grass sickness in horses is the outstanding unsolved problem in front of the Association; information concerning the disease has been collected and distributed to the numerous collaborators. A scheme for the investigation of bovine abortion disease is under the consideration of the Empire Marketing Board. Transmission experiments with scrapie are in hand, and Calmette and Guérin's tuberculosis vaccine is being used, although with due reserve about its value.

Tuberculosis in Fife.

Dr. Pratt Yule states that the mortality-rate from tuberculosis in the County of Fife in 1928 was less than half what it was in 1914, the present rate being 0·70 per 1000. Various factors are responsible for the lessening grip of tuberculosis on the community, but Dr. Yule regards as most important the steady campaign that has been waged against the disease since 1912. The Fife scheme differs from that usually accepted as necessary for the control of tuberculosis. Hitherto, dispensaries had not been established in the county, the patient being visited, examined, and supervised in his home. The mortality-rates compare favourably with those of other Scottish counties of like industrial characteristics.

New Scientific Institutions in Aberdeen.

The notable additions during the past year to the medical and scientific resources of Aberdeen were recorded by Sir George Adam Smith, Principal of the University, on Graduation Day. The new Hospital for Sick Children has been completed and opened. An Imperial Bureau is being founded in close connexion with the Rowett Institute for Research in Animal Nutrition, which is to be the centre for

recording and classifying researches in progress on animal nutrition throughout the British Empire. The National Department of Scientific and Industrial Research is to open another laboratory in close connexion with the University departments of physiology and bacteriology, and the Scottish Department of Agriculture had arranged for the establishment in Aberdeen of an Institute of Soil Research to be named the MacAulay Research Institute. This Institute will be run by a committee of 11, representative of the University, of the three Scottish Colleges of Agriculture and of the Scottish Department of Agriculture. The capital expenditure will be met by Mr. MacAulay, an Aberdonian now resident in Canada, up to a maximum of £10,000.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. H. M. Langdale is placed on Retd. List with the rank of Surg. Capt.

The following appointments are notified:—Surg. Lt.-Comdr. N. B. de M. Greenstreet to *President*. Surg. Lt.-Comdrs. (D.) M. F. Hopson to *Rodney*; and W. E. A. Sampson to *Vivid*, for R.N. Barracks, Devonport; J. L. Jean to *Vernon*; E. C. Bevis to *Victory*, for R.M. Infirmary, Portsmouth; H. J. Luck to *Victory*, for R.N. Barracks, Portsmouth; L. M. Hughes to *Pembroke*, for R.N. Barracks, Chatham; and F. W. Watt to *Victory*, for R.N. Barracks, Portsmouth; Surg. Lt. A. J. Burden to *Cockshafer*. Surg. Lts. D. Duncan to *Cambrian*; and H. N. V. Barnes to *Vivid*, for R.N. Barracks, Devonport.

ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg. Sub-Lt. V. S. Hughes-Davies to be Surg. Sub-Lt.

Prob. Surg. Lt. A. L. Gunn to be Surg. Lt.

The following appointments are notified:—Surg. Lts. T. C. Stevenson and G. A. O. White (D.) to *Victory*, for R.N. Hospital, Haslar, for training; Prob. Surg. Sub-Lt. F. W. Chippindale to *Victory*, for R.N. Hospital, Haslar, for training.

ROYAL ARMY MEDICAL CORPS.

Capt. I. F. MacKenzie, late R.A.M.C. Spec. Res., to be temp. Capt., and temporarily relinquishes the rank of Capt.

Lt. (on prob.) R. R. Leaning, from the secd. list, is restd. to the estabt.

Lt. D. A'Brook is secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion.

TERRITORIAL ARMY.

Lt.-Col. J. S. Y. Rogers having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

Lts. F. W. Bury and A. Barr to be Capts.

Hon. 2nd Lt. B. Reid (late R.A.F.) to be Lt.

ROYAL AIR FORCE.

H. C. S. Pimblett is granted a short service commission as a Flying Officer for three years on the active list.

Flying Officer C. Crowley ceases to be seconded to the Manor House Hospital, Golders Green.

Flight Lt. J. Twohill is transferred to the Reserve, Class D ii.

DEATHS IN THE SERVICES.

Deputy Inspector-General Charles William Buchanan-Hamilton, R.N., retired, who died on July 13th, entered the Royal Navy as surgeon in 1878 and reached the rank of Fleet Surgeon in 1894. He served throughout the Egyptian War, 1882, as surgeon to the *Beacon*, and was present at the bombardment of Alexandria, the seizure of the Suez Canal, the occupation of Port Said, Suez, and Ismailia, and at the surrender of the Aboukir, Damietta, and Ghimileh Forts (Egyptian Medal, Alex. Clasp, Khedive's Bronze Star). He also served as surgeon with the Royal Marine Battalion in the Soudan Expedition of 1884, and was surgeon of the Royal Victoria Hospital, and of H.M. *Sphinx*, at Suakin, until the close of the campaign (Suakin Clasp). He was surgeon of the Naval Brigade in the Burmese War, 1885, and was attached to the Burma Field Force in the advance to Upper Burma, and in the Indian Marine ship, *Tigris*. He also took part in the occupation of Mandalay and deposition of King Theebaw, and in subsequent operations (India Medal, Burma, 1885–87, Clasp). Previous to his retirement with the rank of Deputy General of Hospitals and Fleets in 1907 he was fleet surgeon of Sheerness Gunnery School and Dockyard.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

PROCEEDINGS OF THE REPRESENTATIVE BODY.

THE annual Representative Meeting of the British Medical Association opened in Manchester on July 19th with Dr. C. O. HAWTHORNE in the chair. The President-elect, Prof. A. H. BURGESS, introduced the President-designate for 1930-31, Prof. W. HARVEY SMITH, of Winnipeg, and a short address of welcome to Manchester was read by the Lord Mayor.

Part-payment by Hospital Patients.

Much of the first day was devoted to considering the Association's hospital policy, which the Chairman said would be for some years the most important business of the Representative Body.

In 1927 the Council was invited to prepare a special "middle-class hospital policy," but it has preferred the alternative of suggesting amendments calculated to bring the present "voluntary hospital policy" into line with the new requirements of the public. These amendments involve, first of all, a change in the classification of the patients, who have hitherto been placed in three groups: (1) those unable to contribute in any way; (2) "private patients" who pay for special accommodation and who arrange for treatment fees independently of the hospital; and (3) an intermediate group of "tariff patients" who directly or indirectly pay part or all the tariff charges of the hospital. On behalf of the Council, Sir RICHARD LUCE proposed that a distinct group of "aided patients" should be recognised. It was to be hoped, he said, that there would be a steady growth of the class who did not want charity and who paid the full cost of their keep in hospital, including fees for medical attendance. This class, to which it was suggested that the term "tariff patients" should henceforth be confined, included those for whom payment was made by public authorities, approved societies, employers of labour, insurance companies, or under contributory schemes. Meanwhile, however, there was undoubtedly a large body of people who were able to pay only part of the cost of maintenance and treatment, and the Council held that these should be placed in a definite category. Fees for medical attendance on such patients would be paid to the visiting staff according to what proportion of the full tariff was received by the hospital from the patient or on his behalf.

The proposal to recognise an "aided" class of this kind was vigorously opposed. Sir ROBERT BOLAM, for Newcastle-on-Tyne, argued that some 80 per cent. of the industrial population could pay 2*d*. or 3*d*. a week to contributory schemes and thus pay the full tariff scale. But they would never be brought to do so if they were given a chance of paying a little as and when they thought fit. To admit that this large proportion of the public could never be expected to pay its way was to vitiate the whole position from the start. Small contributions should certainly be accepted, but it should never be suggested that they were adequate.—Mr. BISHOP HARMAN did not approve of making categories or policies cover exceptions which were disadvantageous. It was better to have an ideal than to accept the present conditions under which perhaps the majority of patients would fall into the "aided" class.—Dr. J. C. MATTHEWS feared that this amendment of the hospital policy would lend colour to the theory that hospital staffs ought only to get fees for patients who were paying full tariff charges, and Dr. PETER MACDONALD said it would certainly put an obstacle in the way of arranging full contributory schemes at York.

Among other speakers some support was found for the proposal, and Sir RICHARD LUCE argued to the effect that it provided a stepping-stone

between those who were purely objects of charity and those who paid for themselves. But the meeting, by a large majority, decided to send this part of the new policy back to the Council for further consideration.

Private Patients.

The Council's new suggestions about private patients were accepted with but little alteration. The Association's policy tentatively sets out a scale of incomes, rising to £300 a year, over which no one should be admitted to hospital on a tariff basis. Where special accommodation is available at a voluntary hospital, persons earning more than £300 may be admitted as private patients, but as in the case of tariff patients this is not to be done (except in emergency) without the recommendation of a practitioner. The policy now approved provides that when the special accommodation takes the form of private wards in a hospital which has both public and private wards in one building then :—

(*a*) If the hospital has a resident medical officer or officers and also a visiting staff which is ordinarily responsible for the care of all patients in the public wards, the patient should be under the responsible care of a member of the visiting staff in association with his own private practitioner. The latter should have free access to the patient and should have such share of responsibility and treatment as may be agreed upon between him and the member of the visiting staff concerned. This does not apply where the governing body has made special arrangements permitting practitioners not on the staff to have responsible care of their own patients.

(*b*) If the hospital has not such resident officers and or visiting staff the patient should be admitted under the responsible care of a private practitioner and should be allowed, if necessary, to call in any consultant of his choice.

(*c*) The fees payable by the patient may be determined either by a scale agreed between the medical staff and the board of management, or by private agreement between the medical attendant and the patient.

When, on the other hand, there is in connexion with a voluntary hospital a separate home or annexe exclusively for private patients, then the patient should be allowed to select any available medical practitioner as his attendant, though the latter may be required to show evidence of special knowledge or experience if these are likely to be needed. In the case of cottage hospitals it is recommended that membership of the medical staff should be open to all practitioners in the district and that the patient should have the right to be attended by his usual medical adviser, to whom he would be responsible for fees in the usual way.

Discussion of these proposals failed to reveal any significant cleft of opinion, though on one point, Dr. E. R. FOTHERGILL persuaded the meeting to take legal advice. What would be the position, he asked the Association's solicitor, if the governors of a hospital were sued because they allowed a doctor to maltreat a patient on their premises without previously satisfying themselves of his competence? Would they not be liable for damages?—The fact that the Representative Body has come to take a wry pride in Dr. Fothergill's pertinacity did not prevent it from enjoying Mr. OSWALD HEMPSON'S forensic reply that in the particular circumstances under discussion the patient had himself assumed full responsibility when he called in the doctor.

Services of the Radiologist.

After accepting certain recommendations by the Council concerning the representation of the medical profession on the governing bodies of "separate hospitals or institutions for paying patients not connected with voluntary hospitals," the meeting settled down to consider a memorandum on radiological services. This has been prepared at the instance of the British Institute of Radiology and in the form now approved by the Representative Meeting is likely to be adopted as the policy of the Institute also. It provides, inter alia, that an agreed share of fees received by a hospital for radiological services, or an agreed honorarium, shall be placed at the disposal of the medical staff.

A hospital may, on the advice of the visiting radiologist, arrange a schedule of modified charges for radiological services within a specified scale of income limits, and based upon an average of one half the fees commonly charged for similar private work in the district; but the schedule so arranged is not to be published or exhibited publicly.

A hospital in a district where medical practitioners are privately practising radiology should not provide radiological services for patients able to pay private fees. Where there is no such practitioner the radiologist to the hospital may be allowed to see private patients at the hospital, receiving not less than two-thirds of the fees paid by them.

"The normal approach to the radiologist," says the memorandum, "is through the medical officers of other departments of the hospital, but in exceptional circumstances cases may be referred direct to the radiologist by private practitioners . . . Fees for services to patients in pay beds should be paid to the visiting radiologist in each individual case according to the service rendered, less an agreed proportion to the hospital to meet costs."

The suggestion that in exceptional circumstances the private practitioner may send his cases direct to the radiologist did not pass unchallenged, and Dr. MACDONALD said it would be unwelcome to most members of the visiting staffs of hospitals.—Sir RICHARD LUCE explained that radiologists set great store by it, and it was accepted after Dr. H. B. BRACKENBURY had emphasised the exceptional nature of the circumstances to which it was intended to apply.

Hospitals and Private Practice.

A further appendix to the Council's report, consisting of a "model contributory scheme for hospital benefit" was also agreed to with minor emendations. Brighton argued that such schemes were being worked out for the benefit of hospitals to the detriment of specialist practice; because a private practitioner could not give the services required it did not necessarily mean that the patient should go straight to a hospital. But Dr. H. G. DAIN, whilst admitting that the whole profession would sympathise with this opinion, believed that arrangements for payment of private practitioners could not be embodied in a model contributory scheme for hospitals. And this view carried the day.

Another aspect of the hospital's encroachment on private practice was illustrated in a picturesque speech by Mr. F. C. PYBUS on industrial accident cases. After pointing out that the apparently generous contributions of industrial firms were not always as handsome as they seemed, in view of the services rendered, he remarked that these cases constituted an abuse of the medical staff as well as of the hospital funds. He had recently saved a firm £500 by restoring a patient who was about to be compensated to that extent. Why should such work be done for the many firms who dumped their accidents at the hospital doors, paying amounts which barely covered their keep, and leaving the rest to be made up, perhaps, by pulpit appeals? Why should not such cases be admitted to private wards so that the very expensive labour put into some of them could be recognised by suitable fees? "Going home footsore and weary from my hospital after having saved a few lives and a few limbs," said Mr. Pybus, "I contrasted my position with that of the officer of the law whom the city provides with a State coach and a fanfare of trumpets, going to the courts to award possibly £1000 to one of those persons who had been damaged."

A resolution was passed to the effect that there are two ways by which industrial accidents need not be a charge on voluntary hospitals or on the services of the medical staff: (1) making a charge on industry, which would require legislation; and (2) the development of contributory schemes in connexion with which the services of the staff are recognised in accordance with the policy of the Association.

Pay Beds and the Improvement of British Hospitals.

Dr. CHRISTINE MURRELL, for Kensington, moved:

That the annual representative meeting, on behalf of the British Medical Association, wishes to emphasise the

conviction that pay bed accommodation is wanted not only for those patients who require operative or specialist treatment, but also for those whose need for such accommodation is due to the fact that they cannot receive suitable nursing and domestic attention in their own homes, so that they may receive the attention they require whilst still remaining under the medical care of their own private practitioner.

Supporting this resolution Mr. H. S. SOUTTAR said that everyone was now asking for hospital treatment and it ought to be made available to the whole community. The next few years would see an enormous development; the poor-law hospitals were to be taken over and brought up to date. Before a recent visit to Sweden he had thought he knew what an up-to-date hospital was, but he had discovered there that his ideas were 30 years behind the times. The hospitals of Sweden were as fine as they could be made; everybody had access to them, and general practitioners could use them for their own patients. We too should have first-class hospitals open everywhere to the public and to medical men, but this would be impossible without help from public sources. He was certain there was no X ray apparatus in this country as good as what he had seen in Sweden. The reason was simple. To keep such apparatus up to date it had to be scrapped every five years and no voluntary hospital could afford that.

Mr. W. MCADAM ECCLES spoke of the need for peripheral hospitals in addition to the great centres of education and specialist treatment. A hospital charging six guineas a week would need 150 beds to pay its way.

The motion by Kensington was approved.

Salaries in the Public Health Services.

Sir ROBERT BOLAM reported that since the beginning of this year the scale of salaries in the public health services has been under consideration by a conference composed of representatives of the profession and of local authorities and that a provisional agreement had been reached for presentation to the Representative Body and the various associations of local authorities.

The more important recommendations agreed to at conferences between representatives of local authorities and the British Medical Association on the salaries of whole-time public health medical officers are as follows:—

1.—Resident Medical Officers. £350, rising by £25 a year to £450, with emoluments to include board, lodging, laundry, and attendance.

2.—Medical Officers employed in Departments (three years' professional experience). £500 rising by £25 a year to £700.

3.—Senior Medical Officers (not being M.O.H.) in charge of services—e.g., school medical officer. £750 rising to £1100.*

4.—Medical Superintendents of Institutions other than Mental Hospitals. £750 (not exceeding 150 beds) to £1100 (over 750 beds), these salaries to include housing accommodation and board.*

5.—Deputy or Chief Assistant Medical Officers of Health. Sixty per cent. of the appropriate minimum commencing salary of the scale for M.O.H.*

6.—Medical Officers of Health. Population not exceeding 50,000, £800. Population exceeding 750,000, £1600 (County Councils and certain rural and urban districts), £1800 (County Boroughs and Metropolitan Boroughs and certain urban districts).*

7.—Salaries for combined posts, £800.

8.—Ass stant Medical Officers to Mental Hospitals. £350, rising by £25 a year to £450, with emoluments to include board, lodging, laundry, and attendance. Suitable provision for married assistant medical officers should be made. An additional £50 per annum to those with a diploma in psychological medicine.

9.—General Conditions applying to all appointments. These include provision that travelling and other reasonable expenses incurred in the performance of duties shall be paid; the operation of this scale shall not result in reducing the salary of any medical officer; if the right to terminate a medical appointment on marriage is desired, a specific statement to this effect should be inserted in the advertisement of the appointment; no differentiation of salary shall be made on account of sex.

10.—An Advisory Committee, consisting of eight representatives of various associations of local authorities, eight representatives of the B.M.A., and a chairman appointed by the Ministry of Health, to consider the merits of any case of proposed departure from this agreement, or of difficulty in its application.

11.—Duration of Agreement. From April 1st, 1930, for five years, and thereafter from year to year.

* In classes 3 and 4 an increment of £50 to the salary every two years to 75 per cent. of commencing salary, provided that no salaries in these classes shall exceed £1100. In classes 5 and 6 it is understood that suitable increases for capability and length of service will be given.

This scale, while it is more inclusive, does not differ substantially from that set out on p. 159 of the Annual Handbook of the British Medical Association. The commencing salary in Section 2 (Medical Officers employed in Departments, who have had three years' experience subsequent to qualification) is agreed at £500 (formerly £600). No scale for the medical superintendents of mental hospitals is set out.

Sir Robert recommended that this agreement, set out above, be accepted as a basis of any further negotiations. It was a compromise, and he would not pretend that he was altogether satisfied with it. In some ways the profession might do better with the present system under which constant watchfulness could enforce the offer of salaries attractive to certain sections of medical men. It seemed desirable, however, especially in view of the forthcoming changes in local government, to meet the local authorities in a conciliatory spirit, and it was hoped that the proposed agreement would give the country for the next five years the type of public health service it ought to have. It would make it possible to say to a young man that the question of entering this service was worth careful consideration.

Mr. E. W. G. MASTERMAN criticised details of the agreement but said that the general feeling must be one of great gratitude to Sir Robert Bolam for doing so much to negotiate it.—Dr. MIDDLETON MARTIN thought it marvellous that any conference should have achieved such a document.—Dr. J. T. D'EWART said it would greatly improve the position of junior members of the public health services, but wished that more could have been done for older men.—Dr. H. W. POOLER and Dr. H. KERR drew attention to certain anomalies in the payment of medical officers; Dr. EUSTACE HILL said that the Society of Medical Officers of Health was not entirely satisfied with the agreement but regarded it as a great advance; and in the course of further discussion, Dr. FOTHERGILL said he had observed a great improvement during recent years in relations between private practitioners and medical officers of health.

The draft agreement was accepted by the meeting.

Motor Accidents.

Dr. J. W. BONE (chairman of the Medico-Political Committee) said it had become a misfortune for a medical man to live near one of the great roads of this country. He had to work by day and by night with very little chance of payment and his lot was all the worse if he happened to be on the staff of the local hospital. All the same the Council felt that it was not the function of a body of doctors to initiate a solution of this problem. He therefore moved:

That the Representative Body is of opinion that failing the creation of a central fund by some extra tax on motorists or some system of compulsory insurance, including a priority for charges for medical attendance on any claims made, either of which methods would require legislation, probably highly contentious in nature, no satisfactory solution can be devised of the difficulty experienced by doctors in recovering the amount of their charges for treatment rendered to patients meeting with accidents on the road; further the Representative Body is of opinion that no greater case can be made out for dealing specially with the non-payment of fees incurred by persons involved in road accidents, than for those incurred in the treatment of the victims of any other form of accident.

Dr. C. FORBES, for Aberdeen, produced arguments against nearly all these contentions and proposed that the question should be sent back for reconsideration.

This opinion got spirited support from Dr. J. B. MILLER, who said that Lanarkshire were astounded at the Council's recommendation—in so far as they could understand it. He thought the Council was "shelving the matter in an avalanche of words," and he drew a pathetic picture of the medical man summoned urgently to a motor accident—as often as not to find the smiling face of the countryside unchanged when he got there. Sometimes the patient removed himself; sometimes he was removed by another car; and in any case no doctor would think of attending accidents except from a sense of duty. At the end of the proceedings a constable would often emerge from cover, the reason for his previous modesty being that if he had sent for medical help himself the police would have been liable for a fee. Most motorists were insured against third-party risks. Why, then, should not the insurance company pay the doctor direct, just as (he understood) fire-brigades were paid direct for their salvage?

Dr. R. M. MANWARING-WHITE said he knew that in some areas the police had definite instructions not to send for a doctor so that they should not be liable for a fee; their custom was to ask Tom, Dick, or Harry in the crowd to send for help.

After a brisk discussion, Dr. BONE said he was now convinced that the question was worthy of the Council's further attention, and agreed that it might be desirable to get the views of the big motoring organisations. The resolution was therefore referred for reconsideration—a fate which also overtook the next of the Council's recommendations, namely:

That although it is unsatisfactory that fitness for driving a mechanically propelled vehicle should, as at present it is, be ignored entirely in the granting of a driving licence, the practical difficulties in regard to the position, including that of obtaining a consensus of opinion as to what the disabilities should be, are such that it is inadvisable for the Association at present to make a pronouncement in the matter; further, that no scheme in this respect so far proposed is free from great practical difficulties.

In trying to get the meeting to accept this motion Dr. BONE lucidly set out the practical difficulties with which, he said, the subject bristled, but Dr. FORBES remarked that these had been surmounted in other countries and Dr. DAIN thought the Association should be prepared for future legislation. Mr. BISHOP HARMAN suggested that an ad hoc committee should be set up to consider what, if any, standards of fitness for driving were desirable, and the meeting as a whole clearly favoured this course.

The Noise Nuisance.

An instance of the general desire to set many things right was provided by West Suffolk, who proposed that the Council be instructed to "take steps to secure legislation for the abatement of unnecessary noise." Dr. GRACE GRIFFITH admitted that West Suffolk was the quietest place on earth, but explained that its rural peace only served to emphasise the nerve-shattering noise now made by mechanical pig-feeders and similar devices. Why, she asked, were moving motors obliged to have silencers, whilst stationary oil-engines, from which there was no escape, could be as noisy as they liked? Could not offensive and unnecessary noise at least be scheduled as a nuisance under the Public Health Act? To which Dr. BONE replied that they had tried to do this last year, but Mr. Neville Chamberlain had astutely insisted on knowing just why noise was bad for health, and had eventually referred them to the Minister of Transport as a more appropriate authority. As for fresh legislation, said Dr. Bone, the Representative Body seemed to think its promotion was very easy; but really it was nothing of the kind. This time his plea was successful, and the meeting passed on to the next item on the agenda, which was the Council's new maternity scheme.

A National Maternity Service.

This scheme is intended to reduce maternal mortality and morbidity by ensuring adequate supervision before, during, and after confinement. It is based on the view that not more than 5 per cent. of women require admission to an institution on medical grounds, and it therefore provides for childbirth at home in all save complicated cases, and those needed at hospital for teaching students and midwives.

The midwife will be engaged early in pregnancy, and will thereafter keep the patient under observation. Not later than the thirty-sixth week she will arrange for one or more examinations by the doctor (chosen by the patient), who is to supervise the case, and if any abnormality arises before or during confinement she will call him in at once. The Council holds that the usual routine work of the antenatal centres can be done quite as well at the doctor's consulting room or in the patient's home—an arrangement which secures a continuity of supervision and treatment not at present obtained.

An essential part of the scheme is that medical men should be able to get their patients into institutions and "should, where possible, be allowed to treat those of them so admitted." Such institutions are to be paid for accommodation and nursing of these abnormal cases admitted on the practitioner's certificate, the cost to the service being estimated at £3 per bed for an average of three weeks for 5 per cent. of the total number of women delivered.

Arrangements are further outlined for a postnatal consultation in every case by the doctor, and for the fees of anæsthetists and consultants where these are called in. The proportion of patients who are likely to need the doctor's services during confinement is given as one in ten, payment being at the scale rate of 5*s.* per case now paid by local authorities. For each case the practitioner will further receive an average of 11*s.* 6*d.* for antenatal and 5*s.* for postnatal examination, whilst the midwife will probably get about £2 10*s.* for her services. The "handy woman" has no place in the proposals, but a "home help" will still be required and will usually be paid for out of maternity benefit under the Insurance Acts.

The scheme is intended to apply to all women now entitled to this benefit—i.e., insured women and the wives of insured men—together with other women of similar economic status. The estimated cost on an assumption of 500,000 deliveries per annum is about £2,022,000, which would be offset by the saving of the fees at present paid by the patients or on their behalf. It is suggested that the service should be provided on an insurance basis via the National Health Insurance machinery, and it is stated that an additional contribution on behalf of employer and worker together of 0·4*d.* per week for each insured person, with 0·2*d.* per week from the State, would provide all the money needed. For participants outside National Health Insurance the necessary premiums would be otherwise arranged.

A Brisk Discussion.

Dr. DAIN described the proposals as an attempt to reproduce throughout the country the essential features of maternity services which had shown excellent results in practice. Modern teaching favoured confinement in an institution, but the figures supplied by some of these services showed that labour could be conducted equally safely in the houses of the poor. The scheme permitted free choice of doctor and midwife; it provided that one medical man should see the patient through from start to finish; and it was cheap in the sense of being efficient and economical. It would improve the status of the midwife and encourage a better class of woman to take up this work, and it emphasised the importance of antenatal examination, to which some practitioners were not yet fully alive.

Dr. B. H. PAIN, for Tunbridge Wells, objected strongly to a note in the scheme which says that any woman who wants a doctor to attend her in normal labour must engage him at her own expense. No national scheme, he said, should prevent a woman having her own doctor in attendance. Moreover, the delegation of all normal childbirth to midwives meant that medical men could never acquire the experience necessary for the proper conduct of difficult cases. The proposals were simply proposals for endowing midwives and they would not attract a single medical

man to the practice of midwifery. He could have understood their being presented by the Central Midwives' Board or the Society of Medical Officers of Health; but to find them put forward by the B.M.A. was not only disappointing but disillusioning.

Dr. D. ROXBURGH traced the decline of midwifery to the passing of the Midwives Act. The wise practitioner no longer undertook confinements, for instead of having 100 cases a year—the rough with the smooth—he got ten difficult cases without any compensating change in the rate of payment.

Dr. JAMES YOUNG pointed out that at all events the maternal mortality-rate was not increasing, and spoke of the work of the Queen Victoria Jubilee Nursing Institute, which recorded a rate of only 1·3 to 1·5 per 1000—one-third of the average. He held that the proposed scheme provided in an unprecedented way for coöperation between doctor and midwife.

Dr. C. M. STEVENSON said it was true that the scheme did not benefit the profession financially, but that could not be helped. Midwives were taking over more and more of this branch of practice, and on the whole they could do more for their patients than a doctor could. It would be well to accept a scheme like this which at least gave medical men a share in the work.

In further discussion it was pointed out that a woman in childbirth has a right to ask for alleviation by anæsthetics and drugs which at present can be given only by medical men. More than one speaker said the profession must make up its mind whether it does or does not want to do midwifery. Advertisements of practices suggested that it did not; and it was no good to pass resolutions at the Representative Meeting if they were not going to be backed up at home when the night bell rang. Dr. BRACKENBURY said the object of the scheme was to make childbirth as safe as it could be made, but if it was proposed that a doctor as well as a midwife was to attend every confinement—or even every confinement in which the patient asked for a doctor—then the scheme would never be accepted by those responsible for the national finances. This argument was reinforced by Dr. DAIN'S remark that at the moment there is no public demand that a medical man should be available in every case. So long as the present maternity benefit was available he was satisfied that no injustice would be done to any woman who particularly wanted a doctor to attend her. He said that one of the merits of the scheme was that it had nothing to do with endowment of the profession, and that all along they had been looking at it from the point of view of the women who were to benefit.

With minor emendations the scheme was approved by the meeting.

The Maternal Mortality Inquiry.

A brief exchange of opinion on the reaction of practitioners to the questions of a departmental committee drew from one representative the epigram: "What is worth doing is worth being paid for, and what is not worth being paid for is not worth doing." But this was far from reflecting the spirit of the hour, and the following recommendation of Council was approved:—

> That as the giving of information to the medical investigator who will fill up the form of inquiry issued by the Departmental Committee on Maternal Mortality is regarded by the Association as a voluntary contribution on the part of the medical profession to a scientific inquiry on a question of pressing public importance, the Association is of opinion that no fee should be charged for the service and none accepted if offered.

Psycho-analysis and its Critics.

Four years ago Dr. L. A. PARRY raised this subject because experience of certain unfortunate cases had persuaded him that psycho-analytical methods were capable of doing a great deal of harm, especially to young people. He asked the Association to issue a public warning against these dangers, and in 1926 a committee was appointed under the chairmanship of Dr. R. LANGDON-DOWN to investigate psycho-analysis in all its bearings. (When the report of this committee was issued last month we gave some account[1] of the findings and explained that the terms of reference were held to cover only the views and methods of Freud and his school.)

Dr. R. LANGDON-DOWN proposed that the report of the Committee on Psycho-analysis appointed in 1926, should be accepted as discharging their instructions. The Representative Body was prepared to agree with Dr. F. H. BODMAN'S opinion that in the course of wide reading he had never come across a fairer exposition of the subject. At the same time it listened sympathetically to Dr. PARRY'S objection that not enough stress was laid on the dangers he had in mind. He moved a resolution regretting "that more emphasis has not been laid [in the Report] on the very real and serious dangers, specially to children and adolescents, of any system of mental therapy which postulates a sexual basis as the sole or preponderating cause of nearly all neuroses and pathological mental conditions." As a member of the Committee during its four years' deliberations Dr. Parry declared himself more than ever convinced of the harm that might be done by psycho-analysis, which postulated, he said, that sex was at the bottom of almost all mental and nervous departures from the normal. The Freudians thought that head-nodding, thumb-sucking, and similar disorders were associated with the Œdipus complex, and to treat children on this basis must obviously put sexual thoughts and desires into their heads and thus promote objectionable conduct later on. Mr. E. B. TURNER warmly assented and told of the trouble he had had in "cleaning up the mess" in the minds of young people who had been psycho-analysed. He thought that perfectly healthy adolescents sometimes suffered both physical and mental damage by being encouraged to "think of things they had never dreamt of, and dream of things they had never thought of," and if he was told that those he had in mind had gone to the wrong kind of psycho-analyst—well, all he could say was that there were a lot of the wrong kind about. Similar views were evidently held by a considerable number of those present, many showing themselves suspicious of psycho-analysis, but after Dr. Parry's opening speech no time was lost before Dr. M. G. BIGGS, one of the senior members of the meeting, pointed out that in scientific discussion there should be no question of prejudice. A more detailed defence of the report was offered by Dr. R. G. GORDON, hon. secretary of the investigating committee, who admitted that harm had been done in the name of the method, but urged that this did not condemn it any more than antiseptic surgery was condemned by the errors of its earlier practitioners. Dr. Parry was not fair, he said, in stating that Freud and his followers "postulated" a sexual basis for nervous disorder. They did not; they said they *found* it—which was a very different thing. It was not the business of the committee to adjudicate on the dangers of psycho-analysis unless definite evidence was laid before them; none of the cases brought to their notice had supported the statements made by its opponents, and he doubted whether Mr. Turner's cases would hold water if properly criticised. This brought the sharp rejoinder from Dr. PARRY that it was almost impossible to prove damage in such a case, especially to a committee; "but suppose I hand a boy a tin of gunpowder and a match, must I produce his charred body before I am believed?" Dr. PARRY was again equal to the occasion when Dr. C. M. STEVENSON asked the meeting to stop its heresy-hunting and think of the verdict of posterity. If the theory was true it must be accepted, said Dr. PARRY; but was all criticism a heresy hunt? When the French Government 100 years ago set up a committee to investigate morphia, would they have shown intolerance in drawing attention to the dangers of this drug? As for the verdict of posterity, Dr. J. T. D'EWART pungently remarked that he was thinking not of posterity, but of his own patients and

[1] THE LANCET, July 6th, 1929, p. 31.

of how they were to be protected from psycho-analysts who were not properly trained. Whether or no the best practitioners of psycho-analysis were safe, there were people going about under the same flag who were undoubtedly a public danger here and now, quite apart from questions of posterity. A cognate view was taken by Dr. C. E. DOUGLAS, who objected to the widespread assumption that Freud had discovered the psychological influence of sex and had invented the subconscious mind. The difference between schools of thought on the subconscious was, he said, that James separated it from the conscious by a threshold which was clean, whereas the threshold recognised by Freud was covered with muddy foot-marks. Dr. DOUGLAS vigorously disapproved of certain aspects of the report, and this and other critical opposition to it might have carried the day but for opinions expressed by three of those who had served on the committee. Dr. PETER MACDONALD said that he was clear, at any rate, on two points: First that psycho-analysts (in the true and proper sense) were not charlatans, and secondly that "proof of the dangers of psycho-analysis appears to disappear when probed." After sitting on the committee for three years he did not *know* whether the method was dangerous to children and adolescents, but he was sure that the representatives ought to be in the same position and he begged them not to commit themselves to what Dr. D. CLOW called a pontifical announcement when they did not know, and they knew that they did not know. Dr. LANGDON-DOWN admitted that there must be dangers in any form of exploratory mental therapy, but thought that none had done more than the psycho-analysts themselves to point out these risks and guard against them. Lastly Dr. E. K. LE FLEMING, in giving further approbation to the report, wondered why no case of damage done could be produced if they were indeed so common.

It will be seen that woven among strong feelings about a practical problem there was in this discussion a very general desire to keep an open mind. After serving on the investigating committee Dr. LE FLEMING summarised his feelings in the quotation, "Oh what a dusty answer gets the soul, hotfoot for certainty in this our life"; but this was a negative attitude compared with that of Dr. J. S. MANSON and several other representatives who obviously (like Matilda's aunt) kept a strict regard for truth. With so many adorning the tale it fell, perhaps, to Dr. L. W. BATTEN to point the moral of greatest practical importance. The meeting was very nearly being asked, he said, to declare that nothing so unpleasant as psycho-analysis could possibly be true, and this was an attitude of mind concealing dreadful dangers. People who thought experiments on animals particularly unpleasant were apt to say that such experiments were therefore wrong, and that deductions from them must be unsound. Hence came the necessity to argue that staphylococci did not cause boils, or tubercle bacilli tuberculosis. "We must not do things like that," said Dr. BATTEN; and perhaps because they saw this hideous abyss in front of them the representatives by a large majority threw out Dr. PARRY'S resolution calling attention to the dangers of psycho-analysis. The Psycho-analysis Committee were thanked for their services without comment on the nature of the report.

Election of Chairman and Vice-Chairman.

Dr. HAWTHORNE was re-elected chairman of the Representative Body for the coming year, and Dr. ARNOLD LYNDON vice-chairman.

(To be concluded.)

RATING OF SUNDERLAND HOSPITALS.—Under the new scheme for the unification of rating, the assessment of Sunderland Royal Infirmary was increased to £700, while that of the Aged Seamen's and Widows' Homes at Bishopwearmouth was raised to a point which threatened their closure. The local assessment committee has now decided to rate the Infirmary and the Children's Hospital at the nominal figures of £15 and £5 respectively, with similar large reductions for the other institutions.

Correspondence.

"Audi alteram partem."

THE SCOPE OF CANCER INQUIRY.

To the Editor of THE LANCET.

SIR,—The report of the British Empire Cancer Campaign (summarised in your issue of July 13th) is, as usual, an admirable record of excellent work, but, if I may be allowed a criticism, it seems to me that progress in the investigation of the causation of cancer might be more rapid if the tacit assumption that cancer and sarcoma are different from all other kinds of tumour were dropped, and the scope of the inquiry were enlarged to embrace the mode of origin of all tumours.

Tumours start either from a single cell or from a group of cells which have the same origin, serve the same function, and live under the same conditions. For some reason as yet unknown, these cells at different stages of their development suddenly cease to do any work or to develop any farther, and instead devote the whole of their energy to indiscriminate multiplication. The cause is the sudden assertion of the power of asexual reproduction which is inherent in every cell, more or less in virtue of its descent, but which is kept under control, unable to exert itself so long as the cell continues to expend its energy in doing its own special work. The result is the formation of a growth with a life of its own, distinct from that of the parent that gave it birth, though absolutely dependent on it, drawing all the nourishment it requires from the parent, and doing nothing for it in return, capable of growing and thriving while the parent starves, and only dying when the supply of nourishment is cut off by some local cause, or by the death of the parent—in other words, what may be regarded as a parasite.

The germ cell, whether of the race or of the individual (which, in the course of its development, recapitulates the evolution of the race), possesses the power of growth and reproduction in its fullest measure. It can divide into two and each half can form a separate and perfect individual. Or the separation may be incomplete, or the division may be unequal, when some monstrosity will result. Every part of it possesses this power, and the earliest cells into which it divides inherit it, and can behave almost as independent organisms, capable of moving from one part to another. But as the cells continue to multiply, and the organism to increase in size, this stage of semi-independence comes to an end. Certain groups of cells become marked off by their position or relation to the rest as specially adapted to carry on certain kinds of work, and organs with definite functions begin to make their appearance. One of the earliest of these groups to be marked off in this way is that to which is assigned the function of reproduction and the preservation of the race.

At once the organism becomes divided into two parts, very unequal in size. One, the smaller of the two, is concerned solely with the function of reproduction and the preservation of the race. It does nothing else. It has no other kind of work, and as it is restricted to this one function, it becomes more and more efficient, until bisexual reproduction is evolved, and ultimately the sexes become separate. The tumours that grow from these cells are imperfect representations of organs or tissues, arranged, so far as circumstances permit, in a more or less orderly manner. Many of them are capable of a certain degree of development, and some can carry on a useless kind of work. The reproductive energy of the cells has been released in some way from the control that held it in check, and they are free and unfettered to develop as far as the influence of surrounding structures allows them.

The other, by far the larger of the two, has nothing to do with the preservation of the race, and is given up altogether to the maintenance of the individual. The cells of which it is composed undertake everything

that is necessary for this purpose. The work is of the most varied character, and their structural development, which is determined by the character of their work, is naturally equally varied. Little by little, as they become more and more highly specialised, the reproductive power which they originally possessed in common with their fellows grows less and less. Traces of it may be seen in larval forms, especially of aquatic animals in which the reproduction of limbs is still possible, and in a much more rudimentary form, even in mammalian embryos, but so far as the higher animals are concerned reproduction is limited to the formation of simple tissues, and even in these to those that are not too highly specialised. Structures such as the elements of the organs of the special senses or of the nervous system have lost all power of reproduction, and tumours formed from them are almost unknown.

As the reproductive power is limited in this way, the only tumours that can be formed by these tissues are composed of simple elements, without order, arrangement, or shape, other than is imposed upon them by surrounding structures. Their clinical character depends upon the stage of growth reached by the parent cell before its development came to an end. If it had reached, or almost reached, its final adult form, as for example in the case of fibrous tissue, the tumour is formed of similar adult tissue, and increases slowly in size, pushing surrounding structures to one side. But if on the other hand it was still in the embryonic stage, with all its primitive powers of multiplication and migration unimpaired (and myriads of such cells are constantly being produced throughout life), the tumour is composed of similar rapidly growing cells, capable of invading surrounding tissues and of being carried, partly actively, partly passively, to other regions of the body, where they can grow into tumours like the original one. As development is a continuous process without break or interruption from the very earliest age up to the perfection of specialisation, and this sudden arrest can apparently take place at any stage, the tumours that grow from these cells necessarily shade imperceptibly into each other, and no line of separation can be drawn between them, no matter how much they may differ from each other clinically. Characteristic types can be, and must be, described, around which the majority of these growths can be ranged, but in between these there are numberless gradations of which no one can say whether they belong to one or the other, or whether they may not belong at one time to the one and at another to the other. The distinction is a clinical one.

The simultaneous occurrence of these three phenomena which appear to be essential to the growth of tumours—viz., the cessation of all functional activity, the arrest of development at whatever stage the parent cell may have reached, and the output of all the reproductive energy it still retains, must be associated with, if not caused by, a profound change in the metabolism of the cell. But the agent that can bring about this change is still unknown. Mechanical irritation undoubtedly plays a part, for tumours develop most frequently in places exposed to irritation, but it is open to question whether it is sufficient by itself. Information is more definite about chemical substances such as soot, some forms of tar, and mineral oils, especially when their action is long-continued and associated with irritation. There is no doubt as to what they can do. Very possibly the occurrence of tumours of the bladder in those engaged in aniline dye works, and the development of epitheliomas in cases of unrelieved congenital phimosis are instances of purely chemical action. X rays, which can kill cancer cells and are at the same time the most certain agent for producing cancer known, must act by influencing the metabolism of the cells exposed to them. The first change is an interference with the function of the skin. It becomes dry and harsh. Then the development of the epidermic cells becomes imperfect. Little irregularities appear upon the surface. Definite warts and papillomata follow, and if exposure is continued epithelioma is certain. That these and certain chemical substances are capable of effecting changes in cell metabolism cannot be denied, but as yet too little is known to allow even speculation upon the nature of these changes. Hope seems to point in the direction of tissue culture, and it is not impossible that the problem of the causation of cancer will ultimately be solved by the study of the conditions that influence the function of reproduction.

I am, Sir, yours faithfully,

C. MANSELL MOULLIN, C.B.E., M.D., F.R.C.S.

July 21st, 1929.

THE DEVELOPMENT OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Morlock's valuable paper in your issue of July 13th and Dr. Toussaint's letter in the following issue draw attention to the simulation of influenza by incipient phthisis. Radiology has, indeed, placed beyond dispute the statement that the onset of pulmonary tuberculosis, especially in young persons, is usually an acute process. It is therefore not surprising that the earliest manifestations of the disease are often lightly dismissed by the patient and occasionally by the doctor as the effects of an "influenzal cold" or "chill." Mistakes of this kind are indeed inevitable unless the possibility of tuberculosis is kept constantly in mind. The results may be disastrous alike to the doctor's reputation and to the patient's chances of recovery.

Inquiries as to the first symptons of disease in a series of 50 adolescent and young adult female consumptives who came under my observation in the period 1927–28 gave the following results: Cough (accompanied by lassitude in nearly half the cases) 64 per cent.; haemoptysis, 18 per cent.; influenza, chill, 12 per cent. During the winter rush it is impossible for many practitioners to examine carefully every patient complaining of cough. I think, however, that mistakes in diagnosis might be reduced to a minimum in the busiest urban practice if the following points were remembered:—

1. Cough in a young person, especially in one of the female sex, should always be regarded as a possible danger signal. If persisting for more than a week the spit should be tested for tubercle bacilli. If the result is negative and symptoms continue the test should be repeated on at least two further occasions.

2. A hæmoptysis of one teaspoonful or more should be regarded as evidence of tuberculosis unless other cause can be demonstrated. The only other common cause of pulmonary hæmorrhage in young persons is bronchiectasis. A hæmoptysis which the patient seeks to minimise is almost always of sinister import, one that a patient delights to describe is seldom of any great significance.

3. In physical examination auscultation is more important than percussion—despite the text-books. Moist râles in the upper half of the lung should be regarded as presumptive evidence of tubercle. Dry crackles or superficial rustles should be disregarded. A crepitation is a sound heard not a sound imagined. The common site of early infiltration, as Dr. Morlock has emphasised, is below the clavicle, where in a typical case the skiagram shows a roughly triangular shadow with its base outwards towards the axilla. The infraclavicular and axillary regions should therefore be auscultated with special care, as also the region internal to the vertebral border of the scapula which includes the *zone d'alarme*. If the patient is instructed to give a short cough and take a breath every time the stethoscope is applied the whole chest can be auscultated in a couple of minutes.

The average practitioner cannot command radiograms of the fine quality necessary for chest work, and though a skiagram is always valuable and sometimes essential for correct diagnosis, a poor film is worse than useless. Temperature, pulse, and weight records are obviously desirable but not always obtainable. If, however, due regard were always paid to the criteria indicated above, very few cases of incipient tuberculosis should be missed. A history of possible exposure to infection is not likely to be ignored by a family doctor.—I am, Sir, yours faithfully,

W. BURTON WOOD.

Park-square West, N.W., July 21st, 1929.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular has been posted to each member of the medical profession. If the form has not been received, a duplicate will be sent on request. We shall be grateful for the return of the forms by an early post.—We are, Sir, yours faithfully,

J. AND A. CHURCHILL.

40, Gloucester-place, W.1, July 18th, 1929.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

LOCAL GOVERNMENT (SCOTLAND) ACT AMENDMENT BILL.

REPLYING to Mr. BALDWIN (Leader of the Opposition) in the House of Commons on Wednesday, July 17th,

Mr. MACDONALD, Prime Minister, said that the Local Government (Scotland) Act Amendment Bill was circulated for the information of the House so that they might see what was best to be done in the circumstances, and he had made it clear that unless there was some chance of getting the Bill through Parliament within a reasonable time it would be quite impossible to proceed with the measure. He wished to have an opportunity to pursue his investigations further in order to see whether it would be possible to proceed with the Bill, and he promised to make a final statement as to its fate on the following day.

On Thursday, July 18th, in reply to Sir ARCHIBALD SINCLAIR,

Mr. MACDONALD said that he had made further inquiries about the chances of the Bill in relation to the business which must be finished this month. He had also had representations of both sides of Scottish opinion. With very much regret he saw no prospect of this Bill passing all its stages in this House and in the House of Lords in time to be effective, and, therefore, he did not propose to ask the House to discuss the measure further.

Miss LEE asked if there was any insurmountable reason why the House should not sit a little longer to consider this Bill. Profound disappointment, and indeed indignation, would be caused in Scotland if it was dropped at this stage, especially as many members on the Labour benches felt that they had a full assurance in that House that this matter would, above all others, be given consideration before the summer recess.

Mr. DUNCAN MILLAR: Is it not the case that on Wednesday last the Prime Minister gave this House an undertaking that he was going to save the education portion of the Bill, and is the right hon. gentleman aware that his action will cause great disappointment to the authorities and the people in Scotland who were relying on what the right hon. gentleman had said?

Mr. MACDONALD said that the description of what he had said in the previous week was most inaccurate. He said exactly the opposite. What the Government had to face was whether the Bill could be got through in time.

Mr. MACPHERSON: Are we to understand from my right hon. friend that there will be no further inquiry into Scottish local self-government, or into Scottish local government?

Mr. MACDONALD: That part of my statement (which was a definite statement) remains.

Sir A. SINCLAIR: If the inquiry is going to take place in October, surely it will be a *post mortem*?

Mr. MACDONALD: In any event, four-fifths will be.

Mr. HARDIE: Is the Prime Minister aware that this was a major subject at the General Election?

Mr. MACDONALD said that at the General Election he had stated that there was a possibility of education being separated from the rest of the Act, but that he was not sure and would look into it, and if anything could be done a Labour Government would do it. He had made it clear that, as far as the Act itself was concerned, it could not be annulled or changed, but as regarded the whole of the altered Scottish local government machinery the Labour Party, if it had the enjoyment of power during a full Parliament, would certainly before going to the country complete the inquiries on the subject and take action.

Mr. MACPHERSON asked leave to move the adjournment of the House for the purpose of discussing a definite matter of urgent public importance—namely, "the failure of the Government to suspend the operation of the Local Government (Scotland) Act, 1929, or to proceed with its Bill to amend the said Act."

Fewer than the requisite 40 members intimated their support of Mr. Macpherson's request, and the House therefore proceeded to the Business of the Day.

COLONIAL DEVELOPMENT BILL.

On Wednesday, July 17th, Mr. LUNN, Under Secretary for the Colonies, in moving the second reading of the Colonial Development Bill (a measure to enable the State to grant financial assistance to schemes of development overseas with a view to helping employment in this country), said that when the financial resolution on which the Bill was based was being discussed several speakers had raised the question of medical services, and had urged that they should be considered in any scheme of colonial development. There had been many schemes undertaken not only in this country but by other countries in recent years on which that matter had been considered very seriously, and taken in hand, and they had proved the wisdom of giving attention to the health conditions of those who laboured in these great enterprises. It was equally important that health conditions should be considered even in smaller enterprises. He could assure the House that in any schemes of colonial development the medical services and medical research for the improvement of health conditions would find a very important place.

Lord EUSTACE PERCY said that the Lord Privy Seal and the Under Secretary for the Colonies had both laid stress on the grants for health purposes. These grants, if they were to be permissible under the Bill, would be so under the words "any other means" in Section 1. If they mentioned "any other means" and specified one of those other means, "including surveys," they ran great risks of finding that health would be excluded. That was a Committee point, but he would ask the Government to give their attention to it.

Sir OSWALD MOSLEY, Chancellor of the Duchy of Lancaster, said that quite clearly under the wording of the Bill animal health was included, because anything relating to agriculture concerned animal health, and therefore animals were within the purview of the measure. He thought that Lord Eustace Percy, however, had referred to human diseases. He (Sir O. Mosley) was advised that within the framework of the Bill it was possible to include diseases affecting those engaged in industry and which impaired their efficiency. Certainly such diseases as hookworm, which notably impaired the efficiency of those engaged in industry, could be dealt with under the Bill. In fact, whenever they came to the consideration of industrial efficiency they must at once be led to the physical condition of those engaged in the industry, and it would be a very narrow and very mistaken reading of the purposes of the Bill if the great human element upon which, after all, all industrial efficiency rested in the first degree, was excluded from its purview.

Dr. VERNON DAVIES: Why not include it specifically?

Sir O. MOSLEY said that he had been trying to explain that it was included.

Dr. VERNON DAVIES: With great respect to the hon. baronet, I do not agree with him.

Sir O. MOSLEY said that after the explanation he had given he could only assure Dr. Davies that his fears were not justified.

The Bill was read a second time.

On Thursday, July 18th, the House went into Committee on the Colonial Development Bill, Mr. R. YOUNG in the chair.

Power to Make Advances for the Purposes of Colonial Development.

On Clause 1, Dr. MORGAN moved an amendment to make it clear that schemes for benefiting health or labour conditions were included under the clause. He said that on the second reading debate Sir O. Mosley had stated that he thought that health matters were included in the Bill. The word "health" was not mentioned in the whole of the Bill. Health was a very important subject in the Crown Colonies, and especially in the West Indian Islands. The only possible reference in the Bill which could be included under health was the question of the drainage of land and swamps for the removal of malarial conditions. The disposal of sewage in many of these islands was very primitive at present, and he wanted to make it possible for sewage schemes to be brought within the scope of the measure, as such schemes affected tourist traffic, trade, and the general health of the community. He also wanted to make sure that if a company started a new industry, or to develop an old one, such company should provide proper housing and working conditions for the people engaged in the industry.

Sir O. MOSLEY said that since the second reading debate he had looked closely into the question of whether this matter was covered by the Bill. The impression which he had already stated to the House was confirmed, and he was satisfied that health was included. He was quite prepared, however, if hon. Members desired it, to consider the inclusion of specific words at a later stage to cover this point.

Dr. MORGAN withdrew his amendment.

Later Sir O. MOSLEY moved to include the words "the promotion of public health" in the clause. He said that

indigenous inhabitants would be covered by the words of his amendment, as well as all forms of settlers, and he hoped that hon. Members on both sides of the House would be satisfied that it definitely established the principle of public health.

The amendment was agreed to.

The Committee stage of the Bill was concluded.

THE HOUSING SUBSIDY.

The Housing (Revision of Contributions) Bill was read a second time.

On Monday, July 22nd, Mr. A. GREENWOOD, Minister of Health, in moving the third reading of the Housing (Revision of Contributions) Bill said that it was a modest measure which proposed merely to continue for the present the existing housing subsidy under the 1924 Act and to discontinue, as the late Government suggested, the subsidy under the Act of 1923. He said that he had been criticised by Sir Kingsley Wood for not having done more. He had not done more because he was primarily concerned to avoid discontinuity of building and to give the Government time to produce a Bill of a much larger kind. The prolongation of the subsidy under the 1924 Act did not prejudice in any way what might happen in the future. If he could get local authorities, as he understood he could, to continue their building pending a larger measure, then he would consider this Bill had been amply justified.

Mr. T. SNOWDEN said he took exception to the speech of Lieut.-Colonel Fremantle in which he said that medical officers of health urged as strongly as they could that the Treasury should reduce the vast sums which were spent by the late Government on housing in order to provide more money for other important health services which were calling out for treatment. He (Mr. Snowden) regretted to hear that speech, because if the subsidy would encourage housing—and he believed it would—it would remove evils caused by bad houses and in consequence reduce possible expenditure on the other matters to which Colonel Fremantle had referred.

Lieut.-Colonel FREMANTLE: I only said that it was an extremely extravagant way of doing it.

Mr. SNOWDEN said that it was rank waste to have to spend so much money on evils which were caused directly by bad housing. It was better to spend money on housing than have to spend it on building hospitals.

Lieut.-Colonel FREMANTLE: The whole point is waste. So far as it goes to improving housing we are all in favour of it.

Mr. SNOWDEN said he differed from Colonel Fremantle and he would like to think that the hon. Member did not represent the views of other medical officers of health, or even of the medical profession.

Miss RATHBONE urged that after the lapse of ten years a Select Committee was needed to consider the housing problem from the tenancy side, to see how far they could erect enough houses and to see that those houses passed into the hands of those whose housing needs were the sorest. At present the housing policy of this country might be compared to our having built at vast cost a reservoir intended to relieve the thirst of people who were dying of thirst and then allowing the first call on the water to go to those who wanted water only for the watering of their roses. The problem of incapacity to pay an economic rent was a personal problem and could never be solved, whatever the subsidy might be, by so mechanical a device as a flat-rate arithmetical equal reduction of rent by the amount of the subsidy upon the houses built by the local authorities.

Dr. VERNON DAVIES said that Mr. Chamberlain, the late Minister of Health, as a result of his prolonged experience, came to the conclusion that a subsidy had a distinct effect on the cost of houses; that if the subsidy was raised there was a tendency for the cost to rise, and, on the other hand, if the subsidy was reduced there was a tendency for the cost of houses to be reduced. The present Minister of Health took exactly the opposite view. Although the Minister would not deny that subsidies might have some effect upon prices he was not concerned so much with the matter of prices as with the building of houses as quickly as possible. That helped the building of houses, but it did not help to let them at an economic rent which people could afford to pay. He (Dr. Davies) would suggest that the Minister of Health had a sufficient amount of information to enable the House to come to a considered opinion on the subject, and when the scheme which was germinating in Mr. Greenwood's brain came before the House next session it might be well if a White Paper was laid before Parliament giving the whole arguments for and against a subsidy, what it had done in the past, and what it was expected to do in the future. If the Minister of Health was right in his theory it would be to his great advantage and to the advantage of the country. If, on the other hand, the argument pointed in the other direction he was sure that Mr. Greenwood was a big enough man to acknowledge it. His (Dr. Davies's) belief up to the present time was that Mr. Chamberlain was right in his theory, and that the Government were making a grave mistake.

The Bill was read the third time and passed.

HOUSE OF LORDS.

TUESDAY, JULY 23RD.

The Problem of Slum Clearance.

Lord ARNOLD, Paymaster-General, moved the second reading of the Housing (Revision of Contributions) Bill. He said that it was a temporary measure. The whole question of housing and slum clearance was receiving the constant and earnest attention of the Government. In due course their plans would be made known.

The Earl of ONSLOW said that the Bill was a mischievous and retrograde measure.

The Bishop of SOUTHWARK said that the problem of slum clearance had never really been tackled. It never would be tackled until a large number of new houses, at low rents, were built within reach of their occupants' work. If the problem was to be solved they would be driven back on the policy of giving special children's allowances for rent. Any scheme for dealing with the slums would cost large sums of money, but when the conditions under which the people lived were realised it would be felt that almost any expenditure was worth while. A recent survey of housing conditions in Southwark, by competent and experienced investigators, showed that the condition of affairs was horrible. In street after street they found people living under conditions of darkness, dampness, and overcrowding. Sometimes a man, his wife and his children would be found living in a basement which had long since been condemned as unfit for human habitation. The investigators quoted the fact that the Medical Officer of Health for Southwark had stated that in one year there were 10,000 houses in Southwark which were not in a reasonably fit state in all respects for human habitation. The matter, the Bishop of Southwark continued, was far too large for any borough or Medical Officer of Health or any individual to deal with; it must be tackled by the nation as a whole. He was glad that the Government had decided not to reduce the present subsidy. The present Bill would give the Government time to prepare their plans for a measure dealing with the slums which, he hoped, would be comprehensive and courageous.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 17TH.

Medical Service in Tristan da Cunha.

Mr. SCURR asked the Under Secretary for the Colonies how often the island of Tristan da Cunha was visited officially; what arrangements were made to meet any emergency medical or other call from the inhabitants; and if there was a wireless station on the island.—Mr. LUNN replied: There is no regular programme of visits to Tristan da Cunha. His Majesty's Government, however, have endeavoured to arrange that at least one steamer carrying supplies, &c., calls at the island each year. On learning in April last of a threatened food shortage, His Majesty's Government provided the funds necessary to ensure the call at Tristan of a vessel carrying relief stores. I understand that a wireless apparatus, capable of receiving messages from England, Buenos Ayres, and New York, was installed on the island last February.

Prohibition of Night Baking.

Mr. MANDER asked the Home Secretary whether it was the intention of the Government to include in the forthcoming Factories Act a clause prohibiting night baking.—Mr. CLYNES replied: This question will be considered by the Government in connexion with the Factories Bill, but I am not at present in a position to make any statement.

Private Mental Hospitals.

Mr. SORENSEN asked the Minister of Health how many private lunatic asylums and mental hospitals existed in England and Wales; the number of patients therein, and the number of discharges therefrom during last year.—Miss SUSAN LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: On Jan. 1st, 1929, there were 69 private institutions under the Lunacy Act, and 4649 patients therein. There were 742 discharges during 1928.

Use of White Lead Paint.

Mr. MANDER asked the Home Secretary if the Government were prepared to ratify the International Labour Office Convention, 1921, concerning the use of white lead in painting.—Mr. CLYNES replied: Ratification would have to be

preceded by legislation for the amendment of the present law, and all I can say on the subject at the present moment is that it will be considered with other questions in connexion with the proposed Factories Bill.

THURSDAY, JULY 18TH.

Pensions Medical Officers.

Dr. MORGAN asked the Minister of Pensions the total number of medical practitioners now employed by the Ministry on a sessional basis, and how many of these were specialists.—Mr. ROBERTS replied: The number of medical officers employed by the Ministry on a sessional basis was, during the latest period for which information is available, on an average 363, of whom approximately two-thirds were specialists.

Treatment Allowances in Tuberculosis Cases.

Mr. SIMMONS asked the Minister of Pensions whether he would reverse the present practice regarding tuberculosis cases, whereby ex-Service men who were knocked off work by the pensions doctor were not granted treatment allowances until they entered an institution, by ordering that the payment of such allowances should date from the day of relinquishing work under the advice of a pensions doctor.—Mr. ROBERTS replied: My hon. friend is, I think, under a misapprehension. In any case where the Ministry's medical adviser considers it desirable, in the interests of treatment which has been recommended, that a man should abstain from work pending admission to an institution, it has always been the practice to pay treatment allowances in the interval, subject to the usual conditions.

Pensions Final Awards.

Dr. MORGAN asked the Minister of Pensions the total number of final awards made in the half-year ending June 30th last; the total number of pensioners now receiving final award pensions; the number of such cases who had appealed for re-assessment in the last two years; and whether he would consider application for review if such cases were now submitted to him.—Mr. ROBERTS replied: The total number of final awards made in the six months ending June 30th last was 24,677. The number of pensioners now receiving final awards of life pension is about 390,000. During the past two years 7529 appeals have been made to the Assessment Appeal Tribunals. The arrangements which I was enabled to make five years ago for the correction of serious errors of final award are still in operation.

Unqualified Nurses in Mental Hospitals.

Mr. AYLES asked the Minister of Pensions the number of unqualified nurses at present employed in the mental hospitals under his control; and whether he would take an early opportunity to see that only certificated male nurses were employed in State institutions.—Mr. ROBERTS replied: The male nursing staff employed in institutions dealing with cases of mental and severe nervous disorder is required, to the utmost extent possible, to be qualified by experience in the handling of such cases, and 25 out of the 62 male nurses employed in nursing *certified* cases have the additional qualification of a certificate. With regard to the second part of the question, I understand that the Board of Control have not found it practicable or desirable to advise in public mental hospitals the standard suggested by my hon. friend.

Asylum Workers' Superannuation.

Mr. RAMSBOTHAM asked the Minister of Health whether, in view of the need for the coördination of superannuation of officials both in asylums and mental deficiency institutions as well as in the mental wards of poor-law institutions, and as these would in the main in future come under the same control, he would consider the desirability of ensuring that no superannuation provisions should militate against free interchange of qualified mental nurses between one type of institution and another.—Mr. GREENWOOD replied: I will consider the question raised by the hon. Member in connexion with any proposed legislation amending the relevant Superannuation Acts.

Mental Defectives.

Mr. SORENSEN asked the Minister of Health to state the ascertained number of mental defectives under and above 16 years of age, respectively, in England and Wales, and the number of each category in suitable institutions; and whether he proposed to take steps to ensure the provision of adequate accommodation for these persons.—Mr. GREENWOOD replied: The total number of mental defectives ascertained by local authorities was 66,458 on Jan. 1st last. Of these 19,138 were maintained in institutions. I regret that the available statistics do not enable me to differentiate between those under and those over 16 years of age, but the total given does not include feeble-minded children for whom the local education authorities are responsible. The problem of ensuring the provision of adequate accommodation is receiving constant attention.

Water Shortage.

Mr. LONGBOTTOM asked the Minister of Health if his attention had been called to the serious shortage in water-supplies; and what steps he proposed to take to temporarily amend the regulations regarding compensation water to riparian owners so that local authorities might be helped to overcome their difficulties during this time of emergency.—Mr. GREENWOOD replied: My attention has been drawn to this matter. In the memorandum on water shortage which I have issued this week, I have advised that, where shortage exists or is threatened, and compensation water is supplied, the water undertakers should enter into immediate negotiations with the riparian interests with the object of securing agreement for the temporary reduction or intermission of discharges of compensation water. I trust that all interests will recognise that in the present exceptional emergency, essential domestic needs must have the first consideration, and that reasonable concessions immediately may be the only way to avoid a very serious situation within a short time.

Street Noises and Public Health.

Mr. FREEMAN asked the Minister of Health whether he was aware of the increase of street noises, particularly in London, caused mainly by traffic, inflicting considerable suffering, and being a general menace to health; and what steps, if any, he proposed to take to abate the nuisance.—Mr. MORRISON (Minister of Transport) replied: This matter was considered by a conference convened by my predecessor in October, 1928, and as a result of the recommendations contained in their report, the Motor Car (Excessive Noise) Regulations were made on June 3rd, and will come into operation on August 1st.

League Maternity Convention.

Mr. R. S. YOUNG asked the Secretary of State for Foreign Affairs if he would, at an early date, ratify the League of Nations maternity convention, which had already been ratified by nine European nations.—Miss BONDFIELD (Minister of Labour) replied: I have been asked to reply. As regards this and other International Labour Conventions which have not been ratified, it is proposed to examine each of them in the light of the existing law and practice in this country, and it is not possible as yet for me to say what action may be decided upon in any particular case.

Deposit Contributors and Insurance Benefits.

Sir CHARLES CAYZER asked the Minister of Health whether his attention had been called to the position of deposit contributors to the national health insurance, and to the fact that these contributors could not receive dental or optical treatment, while in the cases of those who had been rejected by an approved society through no fault of their own, and often as a result of war service, they needed such assistance more than the ordinary members of the community; and whether he proposed to consider the general improvement of their condition.—Mr. GREENWOOD replied: The position of deposit contributors as regards title to benefits under the National Health Insurance Acts is as stated by the hon. Member. Deposit contributors who can show that they were unable by reason of ill-health to secure admission to an approved society are now, however, entitled to receive the ordinary benefits without limitation to the amount standing to their individual credit, and I consider that the guaranteeing of these benefits is the best method of meeting the needs of this class of insured persons out of the limited funds available. Men discharged in ill-health from the forces of the Crown can be admitted to the Navy, Army, and Air Force Insurance Fund, and become entitled, in addition to the ordinary benefits, to dental and ophthalmic benefits free of cost.

Small-pox Hospitals.

Mr. BEAUMONT asked the Minister of Health if he would state in which counties there were small-pox hospitals; what provision was made for dealing with small-pox outbreaks in counties which had no such hospitals; and whether it was the policy of the Ministry to encourage county small-pox hospitals as the best and most economical method of dealing with outbreaks.—Mr. GREENWOOD replied: Small-pox hospital accommodation has been provided in every county with the exception of two in England and one in Wales. In these three counties arrangements have been made for the treatment of such cases of small-pox as may occur in hospitals situated in adjoining counties. With modern means of transport there are undoubted advantages in providing small-pox hospitals to serve wide areas, and for this purpose it is often convenient that the accommodation should be provided by the county council.

Venereal Disease Clinics.

Dr. MORGAN asked the Minister of Health the total number of venereal diseases clinics at present in Great Britain and the number administered by municipalities; the total

number of new cases since Jan. 1st last, and the total number of attendances; and whether he was considering an extension and more adequate facilities for such treatment in the near future.—Mr. GREENWOOD replied: The total number of venereal diseases clinics approved by my department in England and Wales is now 188, of which 60 are administered directly by local authorities. No information is at present available in regard to the second part of the question, but during the year 1928 the total number of new cases dealt with at these clinics was 85,908, of whom 27,597 were found not to be suffering from venereal disease, and the total number of attendances of patients was 2,422,749. A number of proposals for the provision of new clinics, or for the extension and improvement of the present facilities for treatment, have been approved or are now under consideration.

Panel Practitioners' Prescriptions.

Mr. REMER asked the Minister of Health if his attention had been called to the prescribing of Dr. Tomlinson, of Dukinfield, and Dr. Cooper, of Altrincham; if he was aware that the Cheshire insurance committee, representing 260,000 insured people, were unanimously of the opinion that the penalties imposed by the Ministry were harsh and punitive, and likely to result in a lowering of the standard of medical benefit of insured persons; and would he state the reasons for overruling the decision of the Cheshire insurance committee.—Mr. GREENWOOD replied: I am aware of the facts in these cases, which were decided in December last, and of the views of the insurance committee on the decisions. The decisions, which rest with the Minister and not with the committee, were taken because he was satisfied that the doctors had imposed charges upon the available funds in excess of what was reasonably necessary for adequate treatment.

Phototherapy and Light Treatment.

Mr. HARRIS asked the Minister of Health whether his department had had any inquiry into the subject of phototherapy; whether he had any information as to the proof of actual physical benefits in curing to the recipient of artificial light treatment as administered by the ultra-violet lamp; and whether he would consider holding an inquiry into the efficacy of light treatment generally, especially in welfare centres.—Mr. GREENWOOD replied: Special inquiries have been made during recent years by medical officers of my department into the application of phototherapy (including artificial light) to the treatment of disease, and the results have been published in the annual reports of the chief medical officer. These observations are being continued, and I do not see any necessity for a further inquiry. As regards the second part of the question, I am advised that the best results of this form of treatment appear to have been obtained in cases of rickets and of certain forms of non-pulmonary tuberculosis.

Health of Women Teachers.

Commander SOUTHBY asked the President of the Board of Education whether he was aware that the number of women teachers who broke down in health every year between the ages of 55 and 60 was increasing; and if he would consider the introduction of a scheme whereby women teachers could be granted optional retirement to begin at the age of 55.—Sir CHARLES TREVELYAN replied: The figures in my possession do not suggest that there is any substantial increase in the number of women teachers who break down in health between the ages of 55 and 60. Provision for such cases is already made in the Teachers (Superannuation) Act, 1925, and I cannot undertake to initiate legislation to provide for optional retirement on pension at an age less than 60.

Disturbances at Antivivisection Meeting.

Mr. DAY asked the Home Secretary whether he had now received the report from the Commissioner of Police upon the incidents which happened with regard to the disturbances at the meeting of the British Union for the Abolition of Vivisection at Caxton Hall on June 20th; whether he had considered this report; and could he now make a statement upon it.—Mr. CLYNES replied: I have now received a report from the Commissioner of Police regarding the meeting in question. The duty of police who may be present at public meetings is to prevent so far as possible any breach of the peace, and no special instructions were required or given on this occasion. It must be recognised that the task of the officer in charge in such cases is often a difficult one, as precipitate action is just as likely to provoke complaint as undue delay. The Commissioner of Police is satisfied, however, after considering a large number of statements made by persons who were present, that the officer in charge of the detachments sent to this meeting committed an error of judgment in not acting sooner. The Commissioner has taken appropriate action in respect to the officer concerned, and has communicated fully with the Union named in the question.

Industrial Diseases.

Mr. MORLEY asked the Home Secretary if his attention had been called to cases of chronic fibrosis of the lungs contracted through inhaling coal dust whilst working in ships' bunkers; and if he would consider the desirability of placing this complaint on the schedule of diseases coming within the scope of the Workmen's Compensation Act.—Mr. CLYNES replied: No such cases have as yet been brought to my notice, but if any cases have come to the knowledge of the hon. Member and he will furnish me with particulars of them, I shall be glad to have the matter investigated.

Mr. PHILIP OLIVER asked the Home Secretary whether he would consider the making of an order extending the provisions of the Workmen's Compensation Acts dealing with industrial diseases to the disease of cancer of the bladder as affecting workers in aniline factories.—Mr. CLYNES replied: An order can only be made in respect of a disease which is due to the nature of the employment, and I am advised that it has not yet been definitely established that cancer of the bladder is caused by employment in aniline works. The matter is at present the subject of a research by the London Cancer Hospital, and I will consider whether any steps can be taken by my department to facilitate this investigation.

FRIDAY, JULY 19TH.

Artificial Silk Factories and Public Health.

Mr. KELLY asked the Minister of Health what complaints had been received by his department as to injury to the health of people residing in the neighbourhood of artificial silk factories.—Mr. GREENWOOD replied: I have received a number of complaints. I would refer my hon. friend to the report by the chief alkali inspector of my department on the emission of fumes from artificial silk works which was published in January last.

Conservation of National Water-supplies.

Mr. AYLES asked the Minister of Health whether, in view of the growing shortage of water and the need for conserving the national water supplies, he would have a survey made of the actual and potential supplies of the country as a whole, with a view to their effective organisation and use.—Mr. GREENWOOD replied: A survey of potential supplies would involve a great amount of detailed investigation and would by itself be of doubtful value. The most practical course is the formation of more advisory regional water committees on the lines advocated in the booklet issued by my department last October. By means of these committees not only the available supplies, but also the needs, of all the districts in the region can be ascertained and a definite policy recommended for meeting requirements over a long period. The findings of these committees can then be coördinated in the general interests, and a national policy formulated.

MONDAY, JULY 22ND.

Methyl Chloride in Refrigerators.

Commander BELLAIRS asked the Minister of Health whether he was aware that refrigerators were in use in this country using methyl chloride; and, in view of the danger to life, if any action was to be taken to prevent its use.—Mr. SHORT, Under-Secretary to the Home Office, replied: I am aware that methyl chloride is used in a number of these machines, but I have no evidence at present in my possession which would justify interference with its use. I understand that it is the practice of the makers to issue instructions with these machines, and so far as I have been able to ascertain these instructions have proved sufficient. If, however, the hon. and gallant Member has any information to the contrary, my right hon. friend will be glad to consider it.

Accommodation of Civil Service Staffs.

Mr. WILLIAM BROWN asked the First Commissioner of Works whether he was aware that certain staffs in the Office of Works and the Ministry of Health were obliged to work in sub-basements and basements much below ground level and lit in the main by artificial light; that it was now proposed also to put Board of Trade staffs in these basements, and that the chief medical officer of the Ministry of Health had reported adversely on the use of these basements for this purpose; and whether he would provide alternative accommodation and so avoid the employment of the staff under these conditions.—Mr. LANSBURY replied: A small number of the staff work, during part of the day only, in the sub-basement, which is lit by artificial light. Other staffs work in the basement courts which enjoy good natural light, and it is proposed to utilise other similar courts for Board of Trade staffs. I am informed that the chief medical officer of the Ministry of Health has not reported adversely on the use of the basement, but, on the contrary, this officer and an officer of the Medical Research Council, reported that, subject to the execution of certain works, the basement courts were quite suitable for occupation by

clerical staffs. Effect has been given to the recommendations of these officers. Under ordinary circumstances I should prefer that all staffs worked above the ground level, but at present we have no other available accommodation. My hon. friend may be assured that everything possible has been done, and will continue to be done, to keep offices as light, airy and healthy as possible.

Opium in India.

Mr. CECIL WILSON asked the Secretary for India whether all the committees appointed in the autumn of 1927 by five provincial governments to inquire into the high consumption of opium in certain areas had presented their reports; whether the local government which arranged to make a similar inquiry had presented its report; what action the government of India had taken or proposes to take upon the reports; when reports not yet presented might be expected; and whether all the reports were to be published.—Mr. BENN replied: Four of the six inquiries have been completed. As soon as the remaining two are finished the government of India propose to convene a conference to collate and compare the results obtained before the local governments pass orders. The publication of each report is a matter for the local government concerned. The Bengal report has been published.

TUESDAY, JULY 23RD.

Sterilisation of Mental Deficients.

Commander BELLAIRS asked the Minister of Health whether his department had full information as to the success of measures for the sterilisation of mental deficients in Switzerland, the United States of America, and other countries; and, if not, whether he would appoint a committee to investigate the matter and the increase of this class throughout the country.—Mr. GREENWOOD replied: The department has certain information regarding the sterilisation of mental defectives in other countries; but the measures in some countries have been introduced so recently, or applied on so limited a scale, that the data at present available do not warrant any deductions from them. I am not in a position to indicate at present whether it will be practicable to initiate an investigation on the questions to which the hon. Member refers.

New Water-supply Schemes.

Sir GEORGE PENNY asked the Lord Privy Seal whether he would consider the desirability of approaching local authorities in areas likely to suffer from water shortage in the event of drought to suggest schemes for the provision of catchment areas and reservoirs, which besides proving of great utility would provide work for the unemployed.—Mr. THOMAS replied: My right hon. friend, the Minister of Health, has recently drawn the attention of local authorities to the necessity of initiating schemes for new water-supplies in advance of requirements and has emphasised the advantages of regional water committees. Approved schemes of the character indicated would be subject to the appropriate unemployment grant.

Food Council and Milk Prices.

Mr. WISE asked the President of the Board of Trade what action was being taken by the Food Council in view of the 80 to 100 per cent. margin for distribution as compared with the farmers' price, in the scheme now under consideration for fixing milk prices by the National Farmers' Union and the milk distributing interests.—Mr. W. GRAHAM replied: I understand that the Food Council will have this matter under examination at their meeting to-morrow, and I have asked them for a report.

Chemical Warfare.

Brigadier-General CLIFTON BROWN asked the Secretary for War whether the War Office had ceased all work on chemical warfare; and if he had any information as to whether similar action had been taken by America, Germany, Italy, France, or Russia.—Mr. T. SHAW replied: His Majesty's Government have declared their intention of ratifying the Geneva Gas Protocol at an early date. In the meantime no change has been made by a departure from the research work which has been for a long time in progress. It is understood that similar research work is being carried on in the countries referred to.

Closing of Unfit Dwellings in Scotland.

Dr. FORGAN asked the Secretary for Scotland whether he was aware that the closure of houses in Elderslie, Thornliebank, Neilston, and elsewhere in the county of Renfrew, represented by the medical officer of health as unfit for human habitation, is being held up by legal difficulties, and that houses which had been made the subject of closing orders were still occupied; and what steps he proposed to take to remedy these matters.—Mr. ADAMSON replied: The answer to the first and second paragraphs of the question is in the affirmative. As regards the last part I understand that out of 51 tenants affected by closing orders in the area referred to by my hon. friend, 13 have not obeyed an order to quit. In view of the poverty of these 13 tenants no proceedings for recovery of the penalty imposed by the statute have been taken. I am in consultation with the Lord Advocate as to the steps that should be taken.

Hours of Work of Juveniles.

Mr. GRAHAM WHITE asked the Home Secretary whether he had in contemplation the introduction of legislation to regulate the hours of work of juveniles in occpuations in which such hours of work were at present unregulated.—Mr. SHORT, Under Secretary to the Home Office, replied: My right hon. friend has been looking into this matter and he hopes to bring proposals before Parliament, but is not able to make a more definite statement at present.

Children and Bovine Tuberculosis.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he was aware that over 2000 infants died every year from bovine tuberculosis; that this was mainly conveyed by milk; that the expenditure on treatment, convalescence, and after-care of this disease in infants amounted to over £9,000,000 a year; and if he would consider the advisability of introducing measures to secure that no milk other than that free from tubercle should be given to infants attending the 3000 infant welfare centres.—Miss SUSAN LAWRENCE replied: I am not aware from what source the hon. Member obtained the figures mentioned in the first part of the question. My right hon. friend is advised that it is not possible to ascertain precisely how many infants die each year from bovine tuberculosis, but such evidence as is available suggests that the number is less than that given in the question. The answer to the second part of the question is in the affirmative. I am not aware of any information to support the figure of £9,000,000 a year mentioned in the third part of the question. As regards the last part, dried milk is supplied at the majority of infant welfare centres, and this is recommended by my department in any case in which the ordinary milk supply is of doubtful quality. A few local authorities supply tuberculin tested milk, but it would not be practicable to require such a supply in every case nor would such a requirement be justified having regard to the many available supplies of dried milk of reliable brands.

Medical News.

UNIVERSITY OF OXFORD.—At a congregation held on July 21st, the following degrees were conferred:—

D.M.—F. J. Bach, New College.

B.M.—J. C. Nicholson, New College; and W. J. Walter, Brasenose.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on July 20th the following degrees were conferred:—

M.D.—E. A. B. Pritchard, W. R. F. Collis, and R. A. McCance.

M.B., B.Chir.—G. E. Lewis, F. H. McCay, C. L. Stote, C. E. Woodrow, R. W. Windle, and D. M. Stern.

M.B.—P. B. Kittel.

B.Chir.—Sagarajasekaran Tyagaraja, F. Bush, C. P. Campion, F. W. J. Wood, and C. J. Grosch.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the subjects indicated:—

Surgery.—C. E. P. Davies, Guy's Hosp.; W. M. Hamer, Manchester and Charing Cross Hosp.; A. Hamid, Middlesex Hosp.; C. Hortop, Guy's Hosp.; V. J. Lopez, St. Mary's Hosp.; W. McDermott, London Hosp.; K. M. Seedat, Charing Cross Hosp.; V. J. C. Vandenbosch, Louvain; and T. K. White, Bristol.

Medicine.—A. Campbell, Edinburgh; V. N. Vatta, London Hosp.; A. N. De Monte, St. Mary's Hosp.; C. Parthasarthe, Birmingham; C. F. H. Quick, St. Mary's Hosp.; P. U. Rao, Charing Cross Hosp.; and A. Somerville, Sheffield.

Forensic Medicine.—V. N. Datta, London Hosp.; E. T. Garthwaite, St. Bart.'s Hosp.; J. Gordon, St. Mary's Hosp.; C. Parthasarthe, Birmingham; C. J. Poh, Edinburgh; C. F. H. Quick, St. Mary's Hosp.; and P. U. Rao, Charing Cross Hosp.

Midwifery.—A. R. Edwards, Liverpool; R. W. Goldsbrough, Leeds; P. D. Kapur, Glasgow; E. Marks, St. Mary's Hosp.; C. J. Poh, Edinburgh; S. V. S. Rao, Madras; T. G. Robinson, Guy's Hosp.; and G. W. Sturgess, St. Bart.'s Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery and midwifery: A. Campbell, V. N. Datta, C. J. Poh, C. F. H. Quick, P. U. Rao, and K. M. Seedat.

UNIVERSITY OF LONDON.—Prof. H. H. Woollard, M.D., B.S. (Melbourne), has been appointed from Sept. 1st, 1929, to the University Chair of Anatomy tenable at St. Bartholomew's Hospital Medical College. He was educated at the University of Melbourne and at University College, London. He served during the war, being mentioned in despatches, and awarded the Croix de Guerre avec palme for his services, and from 1919–23 was senior demonstrator and from 1923–27 assistant professor of anatomy at University College, London. He has held a Fellowship under the Rockefeller Foundation, and has obtained the Symington prize for anatomical research. Since 1927 he has been professor of anatomy in the University of Adelaide.

The University Studentship in Physiology for 1929–30 (value £100) has been awarded to Miss Margaret Hill, B.Sc.

Dr. E. Graham Little has been elected chairman of the Council for External Students.

At recent examinations the following candidates were successful:—

M.S. EXAMINATION.

Branch I., *Surgery.*—Ralph Brooke, Guy's Hosp.; H. I. Deitch, Middlesex Hosp.; and J. R. M. Whigham, St. Mary's Hosp.

Branch IV., *Oto-Rhino-Laryngology.*—S. A. Beards, London Hosp.; and Mildred Warde (University Medal), London (R.F.H.) Sch. of Med. for Women.

M.D. EXAMINATION.

Branch I., *Medicine.*—A. R. Balmain, Univ. of Birmingham and Middlesex Hosp.; Samuel Berman, Guy's Hosp.; M. H. C. Dyson and L. I. Henzell, Univ. Coll. Hosp.; J. C. Hoyle (University Medal), Univ. of Manchester; R. H. Knight, St. Bart.'s Hosp.; Lucy M. T. Masterman, London (R.F.H.) Sch. of Med. for Women and St. Mary's Hosp.; S. K. Montgomery, Univ. Coll. Hosp.; Thomas Robson, St. Thomas's Hosp. K. S. Smith, Middlesex Hosp.; R. G. R. West, St. Bart.'s Hosp.; and Katharine G. L. Williams, London (R.F.H.) Sch. of Med. for Women.

Branch IV., *Midwifery and Diseases of Women.*—Elaine Œnone H. Earengey, Univ. Coll. Hosp.; Phyliss V. L. Epps, and Dorothy E. Stewart, London (R.F.H.) Sch. of Med. for Women.

Branch V., *State Medicine.*—W. E. Snell, Univ. Coll. Hosp.

Branch VI., *Tropical Medicine.*—J. A. Carmen, London Hosp. and London Sch. of Hyg. and Trop. Med.

DIPLOMA IN PSYCHOLOGY.

Winifred C. P. Abraham, Bedford Coll.; Doris I. Huband, King's Coll.; Dorothy M. Lemerle, Univ. Coll.; Norah K. Satow, King's Coll.; Ethel K. Taylor Bedford Coll.; S. E. W. Taylor, London School of Economics; Clara P. Thomson and Ellen M. Walford, King's Coll.; and W. R. Watson, Univ. Coll.

DIPLOMA IN BACTERIOLOGY.

Robert McC. Burnie, R. D. Mackenzie, R. S. Marshall, and A. F. B. Standfast, London Sch. of Hyg. and Trop. Med.

UNIVERSITY OF MANCHESTER.—The following awards have been made: Sheridan Delépine Fellowship in Preventive Medicine: Lois Stent. Robert Platt Physiological Scholarship: Eli Davis. Dr. Robert Angus Smith Scholarship in Sanitary Science: Rupert Lyth. Prof. Tom Jones Exhibition in Anatomy: J. F. Heslop. Entrance Scholarship in Medicine: G. Israëls and W. C. Barber. Sidney Renshaw Prize in Physiology: C. H. Gray. Turner Medical Prize: Donal Sheehan. Dumville Surgical Prize: Donal Sheehan. Wild Prize in Pharmacology: E. D. Portman.

UNIVERSITY OF EDINBURGH.—At a graduation ceremonial on July 17th the following degrees and diplomas were conferred:—

M.D.—*G. G. Allan, *H. M. Anderson, †J. M. Bassett (*in absentia*), ‡G. I. Boyd, E. H. Brindle, †W. R. D. Fairbairn, *G. B. Flint, Alice J. Gray, J. W. Hunter, ‡C. F. W. Illingworth, *J. B. King, Shena Macvicar (*in absentia*), R. J. Matthews, W. J. F. Mayne, *K. T. Moir, J. R. Murdoch, A. M. W. Rae, ‡C. M. Seward, Alice B. S. Smith, and Florence L. Telfer.

* Commended for thesis. † Highly commended for thesis.
‡ Awarded gold medal for thesis.

M.B., Ch.B.—R. D. Aitken, Deborah M. Alcock (*in absentia*), D. M. Alston, L. W. Banks, R. F. Barbour, H. S. A. Bishop, T. P. Bliss, W. J. Brandon, K. M. Brower, J. A. Burgess, J. A. P. Cameron, A. F. K. Clarkson, E. A. Cormack, Mary E. Crowley, Timothy Crowley, J. A. Cuthbert, W. S. Dalgetty, J. M. Davidson, S. C. M. Downing, E. F. J. Dunlop, T. J. Eason, M. A. B. Fenton, John Fletcher, J. M. Fosbrooke, D. A. Fowler, Donald Fraser, J. A. Gemmel, W. H. Gillespie, Kamel Girgis, E. L. Godfrey, George Graham-Cumming, G. M. Greig, Alexander Haddow, Robert Hardy, Robert Harkness, David Harley, R. A. K. Harper, C. P. Hay, Winnifred N. Henderson, Emma L. Howard, J. M. Howie, Jean M. Huggins, William Irvine, James Laurie, J. L. Law, L. R. Levy, D. K. L. Lindsay, Joyce M. Lister, Sydney Livingstone, G. A. Macarthur, R. P. A. Macaulay, I. C. Macdonald, J. P. M'Gibbon, D. J. M. MacKenzie, Margaret B. M'Laren, Dileas Maclean, Archibald Macmillan, Joan K. Macpherson, A. G. G. Melville, J. B. Methven, A. A. Miller, Jean M. Milne, A. St. J. Moffat, Clement Muir, J. M. Muir, William Murray, Helen R. Neve, W. E. Orchard, D. S. Patton, J. R. H. Peat, Samuel Pinkinsky, L. T. Pollard, J. R. M. Read, A. I. Rosenthal, R. A. T. Rouse, R. M. Saleh, Agnes Y. Savage, Walter Schlapp, V. V. Schoeman, J. M. Scott, Agnes D. Sloan, D. A. Smith, W. H. M. Smith, Richard de Soldenhoff, Bernard Stein, W. A. R. Thomson (*in absentia*), A. I. L. Turnbull, A. B. Wallace, E. J. G. Wallace, H. J. Weir, Mary M. A. Whittet, J. L. Wilkie, W. E. Willis, Jessie R. Wilson, and J. F. A. Wood.

Honours.

Diploma in Radiology.—G. C. Field, A. J. G. Mackay M. J. S. Pillai, Sher Singh, Elizabeth Thompson (*all in absentia*).

The following awards of fellowships, scholarships, and prizes have been made:—

The Cameron Prize in Practical Therapeutics has been awarded to Lieut.-Colonel Sir Leonard Rogers, F.R.S., in recognition of the discoveries he has made in the treatment of several tropical diseases, and in particular in the treatment of Cholera, Amœbic Dysentery and Leprosy.

Thesis Gold Medallists: Dr. G. I. Boyd, Dr. C. F. W. Illingworth, and Dr. C. M. Seward. Ettles Scholarship and Leslie Gold Medal: Dr. James Laurie. Gunning Victoria Jubilee Prize in Chemistry: Mr. R. W. Armour, Ph.D. Allan Fellowship in Clinical Medicine and Clinical Surgery: Dr. C. P. Hay. Murchison Memorial Scholarship in Clinical Medicine: Dr. I. G. W. Hill. M'Cosh Graduate's and Medical Bursaries: Dr. R. M'K. Honey. Mouat Scholarship in the Practice of Physic: Dr. Robert Harkness. Buchanan Scholarship in Midwifery and Gynæcology: Dr. James Laurie. James Scott Scholarship in Midwifery: Dr. E. L. Godfrey. Beaney Prize in Anatomy and Surgery: Dr. E. L. Godfrey. Conan Doyle Prize: Dr. R. D. Aitken. Annandale Gold Medal in Clinical Surgery: Dr. R. F. Barbour. Murdock Brown Silver Medal in Clinical Medicine: Dr. C. P. Hay. Royal Victoria Hospital Tuberculosis Trust Gold Medal: Dr. A. G. G. Melville. Scottish Association for Medical Education of Women Prize: Dr. Agnes Y. Savage. Dorothy Gilfillan Memorial Prize: Dr. Agnes Y. Savage. Wightman Prize in Clinical Medicine: Dr. R. D. Aitken. Pattison Prize in Clinical Surgery: Dr. J. A. P. Cameron and Dr. R. A. T. Rouse (equal). Cunningham Memorial Medal and Prize in Anatomy: C. A. Green. Whiteside Bruce Bursary: Mr. Alexander Brown.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting was held on July 16th, the President, Dr. Robert A. Fleming, being in the chair. Dr. G. S. Brook, Dr. F. W. Woolrabe, Dr. A. Rae Gilchrist, and Dr. Rutherford Dow were introduced and took their seats as Fellows of the College. Dr. F. T. Bowerbank and Dr. W. T. Munro were elected Fellows of the College. Dr. S. A. Kinnier Wilson had been appointed Morison Lecturer for 1930.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the final professional examination for the diploma of L.D.S.:—

W. C. Craig, R. T. Amour, A. A. McNish, J. D. Johnstone and J. N. K. Clarkson.

Pathology, Medicine, and Surgery.—W. P. Neilson.

Dental Subjects.—W. A. E. Duncan and G. M. S. McGibbon.

DONATIONS AND BEQUESTS.—Among other bequests the late Mr. John Hughes, of The Lache, Clifton Park, Birkenhead, left £1000 to the Birkenhead and Wirral Children's Hospital for a John Stanley Hughes Cot Fund: and £1000 to the Birkenhead and Borough Hospital, of which the income is to be applied for the maintenance of the hospital.—The late Mrs. Caroline Tremlett, of Highlands, Exeter, left £500 each to the Royal Devon and Exeter Hospital, the Convalescent Home, Exmouth, and the Institution for the Blind, St. David's Hill, Exeter, as well as other charitable bequests.

BRITISH SOCIAL HYGIENE COUNCIL.—The Summer School, the fourth of its kind, which is in session at Westminster College, Cambridge, remains open until Thursday, August 1st. Social problems affecting standards of sex conduct are being considered in relation to the biological sciences; on the preventive side the protective education of young people in industry and the special problem of the adolescent unemployed, the coöperation between parent and teacher in the training of children, come under discussion. Dr. F. A. E. Crew, professor of animal genetics at the University of Edinburgh, is giving a course of six lectures on Biology and Human Affairs, and Col. P. S. Lelean, professor of public health at the same University, a course on Public Health and Social Hygiene. Evening meetings to be followed by discussion will be addressed by Dr. I. Feldman, Miss V. D. Swaisland, B.Sc., Sir Basil Blackett, Mrs. C. Neville Rolfe, and Mr. P. G. Cam ray, director of Messrs. Stanley Jay, Ltd. A course in evolutionary biology, with special reference to work in school classes, with practical work, will be given under the supervision of Dr. E. Watkin at the West Riding of Yorkshire Education Committee's Summer School at Bingley from July 31st to August 14th.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors, held on 3rd July, Surgeon Vice-Admiral Arthur Gaskell, C.B., Medical Director General of the Navy, in the chair, the sum of £10 was distributed to the only applicant.

NEW WING TO HITCHIN HOSPITAL.—On Saturday last the Duchess of York opened a new wing of the North Hertfordshire and South Bedfordshire Hospital at Hitchin. Since the war £35,000 has been spent on the enlargement and the development of the institution, and the new wing has cost £7000.

EAST SUSSEX HOSPITAL.—A new children's ward in the Royal East Sussex Hospital at Hastings has been opened by Lord Rothermere, who marked the occasion by a gift of 2000 guineas. The ward is the gift of Mrs. Whitefoord, of Battle, in memory of her son, Esmond.

LONDON FOOT HOSPITAL.—This institution has just moved into new quarters in Fitzroy-square, and an appeal is being made for £12,800 to free it from debt. Last year free treatment was given to over 12,000 patients, and Sir A. Henry McMahon, the chairman, states that the number could be doubled this year if more money were available.

POST-GRADUATE COURSE IN ORTHOPÆDIC SURGERY.—A special two weeks' course will be held at the Royal National Orthopædic Hospital from Nov. 18th to 30th. Lectures and demonstrations will be given and those taking the course will have access to operations and the practice of the hospital. Application should be made to the Secretary of the hospital, or to the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W.1.

MEDICAL TOUR IN CZECHO-SLOVAKIA.—A tour of the principal towns of Czecho-Slovakia has been arranged between Sept. 8th and Sept. 17th, 1929. The party will meet at Eger on Sept. 8th and will proceed to Franzensbad, Marienbad, Carlsbad, Jachymov, and Prague, where a stay of two days will be made. Macocha and Pistiany will then be visited and the party will reach Vienna on Sept. 17th. Further particulars and a detailed programme can be obtained from the organisers of the tour, Mon Voyage Société de Voyages Internationaux, 9, Rue de la Michodière, Paris, 2e.

METROPOLITAN ASYLUMS BOARD.—Dr. E. W. Todd, D.P.H., has been appointed bacteriologist at the antitoxin establishment of the Board at the Belmont laboratories, Sutton, Surrey, of which Dr. R. G. White is the director. Dr. Todd is at present research assistant in the inoculation department, St. Mary's Hospital, a position which he has held since January, 1924, and has had eight years' experience in pathological work, including a Rockefeller Medical Fellowship held at the Rockefeller Institute in 1927–28.

ENLARGEMENT OF STORNOWAY HOSPITAL.—Mrs. Macaulay, of Montreal, Canada, recently opened a new wing of the Lewis Hospital, Stornoway. The wing, which consists of two maternity wards, with accommodation for nurses, has been given by her husband, Mr. T. B. Macaulay, President of the Sun Life Assurance Co. of Canada, who has endowed the hospital with the sum of £16,000. The endowment fund has just been increased by a gift of £3000 from Mr. John Bain, of Chicago, a brother of the Provost of Stornoway.

BIRMINGHAM HOSPITALS' CONTRIBUTORY SCHEME.—The remarkable success of this scheme grows progressively. Since it came into operation in January, 1928, it has paid £165,000 to the Birmingham hospitals, nursing societies, and kindred institutions; there are 270,000 members employed by 4400 firms, 2500 of which add 25 per cent. to the amounts contributed at their works.

A "SUNSHINE" CONVALESCENT HOME.—Recently Prince George opened the first wing of a new Children's "Sunshine" Convalescent Home at Shoeburyness.

MOTORING AND EXCESSIVE NOISE.—The regulations prohibiting excessive noise in the use of motor cars, of which notice was given by the Minister of Transport on June 3rd, are to come into force next Thursday, Aug. 1st. These regulations make it an offence for any person to use, or permit to be used, a motor car, or a trailer drawn by a motor car, which causes any excessive noise as a result of any defect in design or construction, or lack of repair or faulty adjustment. It is also an offence under the regulations to use a vehicle or trailer which makes an excessive noise due to the faulty packing or adjustment of the load.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

ALL SAINTS' HOSPITAL, Vauxhall Bridge-road, S.W. SPECIAL COURSE IN UROLOGY. Afternoons and Evenings, duration of course one month from July 29th. Further information from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. Prince of Wales's General Hospital, Tottenham, N.

MONDAY, July 29th.—2.30 to 5 P.M.: Medical, Surgical and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY, August 1st.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

Appointments.

FLETCHER, T., M.B., Ch.B. Glasg., has been appointed Surgeon under the Factory and Workshop Acts for Kirkcowan, Wigtown.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen, County of, P.H. Dept.—Jun. Asst. M.O.H. £500.
Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. £140.
Birkenhead General Hospital.—Cas. S. £100.
Birmingham and Midland Eye Hospital, Church-street.—Res. Surg. O. Also Two H.S.'s. £150 and £110 respectively.
Birmingham Children's Hospital.—Res. M.O., £175.
Bradford Children's Hospital.—H.S. Also H.P. Each £120.
Brighton, Royal Sussex County Hospital.—H.S. £150.
Cairo, Egyptian University.—Prof. of Clinical Pathology. £E.1500.
Colonial Medical Services.—Vacancies.
Coventry and Warwickshire Hospital.—Res. H.S. £125.
Croydon Mental Hospital, Upper Warlingham.—Second Asst. M.O. £350.
Exeter, Royal Devon and Exeter Hospital.—Asst. H.S. At rate of £100.
Glasgow Royal Cancer Hospital.—Pathologist. £400—£500.
Great Yarmouth General Hospital.—Sen. H.S. £150.
Hertfordshire County Council.—Two School Dentists. Each £500.
Huddersfield Royal Infirmary.—Jun. H.S., at rate of £150.
Hull Royal Infirmary.—Cas. H.S. At rate of £130.
Ilford Emergency Hospital.—Sen. and Jun. H.S.'s.
Indian Medical Service.—Commissions.
Infants Hospital, Vincent-square, Westminster, S.W.—H.P. at rate of £75.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. At rate of £120.
Liverpool, Alder Hey Children's Hospital, West Derby.—Res. Asst. M.O. £200.
Liverpool and District Hospital for Diseases of the Heart.—H.P. At rate of 50 guineas.
Liverpool County Borough.—Jun. Asst. School M.O. £600.
Liverpool Open Air Hospital for Children, Leasowe.—Jun. Res. M.O. At rate of £200.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
London Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120.
Longton Hospital, Stoke-on-Trent.—H.S. £120.
Lowestoft and North Suffolk Hospital.—H.S. £120.
Manchester, Ancoats Hospital.—Orthopædic H.S. Also H.P. Each at rate of £100.
Manchester Royal Infirmary.—Jun. Asst. M.O. for Radiological Dept., £350. Also Jun. H.S. £100.
Miller General Hospital, Greenwich-road, S.E.—Hon. P. to Skin Dept. Also Cas. O. At rate of £150.
Nottingham City Education Committee.—Sen. Asst. School M.O. £600.
Oldham Royal Infirmary.—Three H.S.'s. Each at rate of £75.
Philadelphia, Hospital of the Women's Medical College.—Hospital Resident.

Plymouth, City and Port of.—Asst. M.O.H. £600.
Plymouth, Udal Torre Sanatorium, Yelverton.—Res. M.O. £450.
Preston and County of Lancaster, Queen Victoria Royal Infirmary. H.S. £150.
Queen Mary's Hospital for the East End.—Hon. Asst. Radiologist.
Radcliffe-on-Trent, Notts County Mental Hospital.—Sen. Asst. M.O., &c. £520.
Rotherham, County Borough of.—Deputy M.O.H., &c. £650.
St. John's Hospital, Lewisham, S.E.—Res. House Appointment, £100.
Salisbury General Infirmary.—Res. H.P. £150.
Salisbury Municipality, S. Rhodesia.—M.O.H. £900.
Sheffield Royal Hospital.—Ophthalmic H.S. At rate of £80.
Sheffield Royal Infirmary.—Surg. Reg. £200. Also Asst. Cas. O. H.S., Ophth. H.S., and Asst. Ophth. H.S. Each at rate of £80.
University College Hospital, Gower-street, W.C.—Asst. Radiologist. £200.
Warrington Infirmary and Dispensary.—3rd Resident. At rate of £150.
Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—Jun. H.S. At rate of £125.
Worcester General Hospital.—Sen. and Jun. Res. M.O.'s. £180 and £120, respectively.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Banchory (Kincardineshire), Chipping Sodbury (Gloucestershire), at Harlow (Essex), and at Colwyn Bay (Denbighshire).

Births, Marriages, and Deaths.

BIRTHS.

ENNION.—On July 16th, at Harlech House, Burwell, the wife of Dr. E. A. R. Ennion, of a daughter.

FRANKLIN.—On July 15th, at Banbury-road, Oxford, the wife of Dr. K. J. Franklin, of a daughter.

HARVEY-KELLY.—On July 17th, at Clonhugh, Co. Westmeath, to Sybil Harvey-Kelly, M.B., B.S., D.P.H., wife of Lieut.-Colonel Charles Harvey-Kelly, D.S.O.—a daughter.

KITCAT.—On July 16th, the wife of Dr. C. de Winton Kitcat-St. Leonards-on-Sea, of a son.

REYNOLDS.—On July 18th, at Aldershot, the wife of Major W. L. E. Reynolds, M.C., R.A.M.C., of a daughter.

WALLACE.—On July 16th, at Murrayfield, Horsham, Sussex, the wife of John Hugh Wallace, L.D.S., of a son.

MARRIAGES.

ABBOT-ANDERSON—PORTER.—On July 17th, at the Parish Church, St. Michael the Archangel, Lyme Regis, Dorset, William Maurice Abbot-Anderson, C.V.O., M.B., B.S., to Muriel Violet, only daughter of the late Mr. Percy Charles Porter and Mrs. Porter, of Abercorn-place, N.W.

BOWERS—BAKER.—On July 16th, at Holy Trinity Church, Brompton, Captain George Percy Farmar Bowers, I.M.S., to Winsome Mary Bassett, younger daughter of the late Mr. and Mrs. Frank Edwin Baker, of Northampton.

OSBORNE—HALL.—On July 17th, at St. Nicolas and St. Faith, Saltash, Surgeon-Lieutenant L. B. Osborne, R.N., of Bexhill, to Marie Kenley Hall, of Saltash, Cornwall.

DEATHS.

BEALE.—On July 12th, at Roman Tower, Broadstone, Dorset, Hanway Richard Beale, M.D. (Lond.), M.B., M.R.C.S., L.R.C.P., D.P.H. (Sheffield), of Bridgegate House, Retford, Notts.

JOHNSON.—On July 17th, at Church-road, Hove, Sydney Perrins Johnson, L.D.S., R.C.S., Ireland, in his 74th year.

PARKER.—On July 15th, at Thames View Cottage, Flackwell Heath, Bucks, George Dines Parker, M.R.C.S., L.R.C.P., M.B. Lond., aged 64.

WHITTON.—On Friday, July 19th, at a nursing home, Aberdeen, Dr. Alfred Bell Whitton, Towie House, Turriff, and late of Aberchirder.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Notes, Comments, and Abstracts.

FOUR MILLENNIUMS OF CHINESE MEDICINE.

BY K. C. WONG.

PART II.—THE HISTORICAL OR CLASSICAL PERIOD (*continued*).

Three Great Pioneers.

CHINESE medicine begins properly in the Han Dynasty and its scientific advancement centres in the figures of Tsang Kung, Chang Chung-King, and Hua To—three of the greatest Chinese doctors of China. Tsang Kung, who lived about 170 B.C., was the first to record personal observations of clinical cases; a detailed list is extant of a group of his case-histories, revealing the medical philosophy of the time Of the 25 cases he has left on record—almost the only record of its kind for the next 1500 years—ten are reported as fatal. Tsang Kung was modest, for he admitted that his prognosis was not always accurate and that he could not cure any disease unless the pulse indications were favourable. He kept his case-notes for a double purpose—to estimate the percentage of failures and successes and to guide him in future predictions. The case-histories are not to be compared with those of Hippocrates—indeed, they are not of much scientific value, and after Tsang Kung this practice of taking clinical case-histories died out until the Sung Dynasty, when it was resumed fervently, and, of course, continues to be the method of the present time.

Chang Chung-King, the greatest of the trio, was also a doctor of literature. Little is known of his life except that about A.D. 195 he was Mayor of Changsha for some time, but he is often spoken of as the Chinese Hippocrates and is venerated as a sage. His fame rests chiefly on his work upon typhoid fever, which is one of the medical classics, ranking with Huan Ti's Canon of Medicine in importance. It was the first book of the kind in Chinese, but does not, as the title implies, deal with typhoid only, but with other fevers as well. In it are found 113 prescriptions, scientifically written, and containing only a few potent drugs, instead of being the "shot gun" formulæ of later practice, containing perhaps a dozen inert ingredients. Chang Chung-King was perhaps the first to employ enema to evacuate the bowels, and his antipyretic treatment of fever by cold baths antedates James Currie's method by 1700 years. Treatment which was chiefly confined to acupuncture, moxa, massage, and the administration of draughts and medical writings which were entirely philosophical, underwent change with the advent of Chang Chung-King. A new era was inaugurated and diseases were studied from a clinical standpoint, emphasis being laid on the physical signs, the symptoms, and the course of an illness: the methods of treatment and the action of drugs were studied rather than the theories of disease. Chang Chung-King stands above the crowd not only on account of his keen powers of observation but also because of his lofty ideals. He gave to the profession of medicine a high conception of its dignity and mission. But after his death scientific medicine degenerated again into dogmatic formalism, and no writings of any value or originality appeared until the Sung Dynasty, a gap of nearly one thousand years.

The last of the trio, and a contemporary of Chang Chung-King, was Hua To, the most famous surgeon of China. To him is usually attributed the discovery of anæsthetics, though Pien Chiao is credited with having employed it about four hundred years before him. It is said that he administered to his patients an effervescing powder in wine which produced complete unconsciousness, and that he performed all sorts of operations ranging from venesection and acupuncture to laparotomy, excision of the spleen, and various operations on the intestines and liver. A pioneer of hydrotherapy, he was also an exponent of systematic exercise and invented a system called the "frolics of the five animals." Most of the nobles of that period were his patients. Among them was Kwang Kung, a famous general, now deified as the god of war, on whom he operated without an anæsthetic for a poisoned arrow wound of the arm. King Tso Tso was another of his patrons. Hua To offered to cure the King's headaches by opening the skull under hashish. Accordingly he was arrested, thrown into prison, and later was executed. Just before his death he offered his manuscripts to a warder, who dared not take them, when Hua To burnt them. Legend, however, has it that a few leaves of his written work were recovered from the ashes, and that these described the method of castration, which is the only operation still known to the Chinese. The books extant bearing his name are two—viz., "Inner

Reflection Diagrams," and "The Internal Organs," and in the latter is a prescription which marks the earliest occurrence of the internal use of mercury in therapeutics.

The Four Methods of Diagnosis.

A prominent feature in this age of science was the introduction of the four methods of diagnosis—namely, observation, auscultation, interrogation, and palpation, but in course of time the first three methods fell into disuse, entire reliance being placed on palpation. The greatest importance was attached to this procedure, and it came to be believed that any internal diseases can be revealed by feeling the pulse alone. The supposed sympathy that exists between the different points and the pulse and the internal organs are set down in the following table :—

		Left wrist.	*Right wrist.*
Inch when lightly pressed	indicates the state of the	small intestines.	large intestines.
,, ,, heavily ,,		heart.	lungs.
Bar ,, lightly ,,		gall-bladder.	stomach.
,, ,, heavily ,,		liver.	spleen.
Cubit ,, lightly ,,		urinary bladder.	three passages.
,, ,, heavily ,,		kidneys.	gate of life.

The last two are imaginary organs.

Alchemy.

Buddhism was introduced into China by Ming Ti in A.D. 66 with unfortunate results for science. At first making but little progress it gradually gained a firm foothold, when the Taoists, realising their declining influence and wishing to stem the tide of opposition, became active. Chang Tao-Ling, popularly known to foreigners as the Taoist pope, invented charms and incantations for the curing of diseases and, seeing the lucrative income brought in by these devices, the Buddhist monks invented their system of charms, with the result that the people were steeped in superstition.

As in Europe 1200 years later, the search for the philosopher's stone and the elixir of life reached their height during the Tang Dynasty, an age of superstition. Magicians, doctors, and alchemists were found everywhere experimenting with herbs and minerals in an attempt to discover a substance which could confer on the person drinking it everlasting beauty or life. Of 22 rulers of this period seven experimented with these elixirs and died from the effects, and in these vain pursuits the time, the health, and the fortunes of thousands were wasted. Chief among the alchemists was Keh Hung, A.D. 281–360, who wrote the famous "Handbook of Emergencies." This book contains an authentic description of small-pox—the first in the world—Rhazes' account, which is regarded as the earliest record, being between A.D. 880–932. Another famous doctor was Tao Hung-ching, the author of "Formulæ of Famous Physicians," which is a work on medical plants. The previous materia medica contained only 365 kinds of herbs; Tao included in his treatise 365 additional drugs, exactly doubling the original number.

The Literature in the Tang Period.

The most important works on medicine in the Tang Dynasty were the "Thousand Gold Remedies" (A.D. 652) and the "Medical Secrets of an Official." The former is a book of 60 volumes by Sun Su-moh, a doctor of literature, who is immortalised as one of the genii. There is a supplement of 30 volumes, containing a full collection of incantations. The latter was compiled by Wang Chu, who was not a doctor by profession. Many formulæ for demoniacal possessions and other peculiar diseases are found scattered among its pages. It consists of 40 volumes. These two works sum up the teachings and discoveries up to that time. Treatment forms the chief feature of these books. In fact, they are collections of prescriptions and remedies corresponding to the modern system of treatment.

The fame of Chinese medicine during the Han and Tang Dynasties spread far and wide. It is recorded that in A.D. 609 Japan sent Dr. Fuyiwaiyi and others to study medicine in China, where they stayed for 15 years.

While Nelaton, in Paris, invented the catheter in 1850, in China the instrument was known in the seventh century A.D. In the "Thousand Gold Remedies" the hollow leaves of *Allium fistulosum* are recommended to be inserted into the urethra to a depth of three inches, when air is then blown into them. One doctor mentioned in another treatise, the "Precious Mirror of Hygiene," used an empty pig's bladder with a quill tied to it for a similar purpose, but for obvious reasons such crude technique, attended with risks, soon fell into disuse. The idea of vaccine therapy seems to have been promulgated, and an instance is recorded in which the patient's own pus was taken and injected under the skin around the original sore. Organotherapy, formerly much ridiculed and now hailed as a valuable modern discovery, was known to every Chinese housewife. The use of sheep thyroid for cretinism, goitre, &c., is mentioned in the sixth century. Even psychotherapeutics, so much in vogue nowadays, was practised as early as the second century B.C. in the form of charms and incantations.

III. The Mediæval or Controversial Period.

The Chinese have a great reverence for authority. What the ancient authorities assert is regarded as always right; the accuracy of their statements is unquestioned, and this veneration of the ancients amounts almost to a worship and is the chief cause of the scarcity of original writings and the petrified fixedness of Chinese medicine.

Literature.—In the beginnings of the Sung Dynasty a marked change is noticed. Monographs on particular diseases began to appear. The number and variety of publications in this dynasty exceed that of all the previous dynasties put together; many of them are quite original. A selected list of the most important works is given below.

1. Tung Keh: Treatment of Beri-beri. 2 vols. The first and only monograph on this subject.
2. Shen Chi: Care of the Aged. The earliest treatise on hygiene with special reference to the care of feeding of old people.
3. Chen Chi-Ming: Text-book of Women's Diseases. 24 vols. A special work on diseases peculiar to women. The first of its kind in this branch of medicine.
4. Obstetrics. 2 vols. Author unknown. This is the earliest monograph on this important subject.
5. Chen Yin: Three Causes of Diseases. 18 vols. A standard work on pathology.
6. The Fontenele. 2 vols. Anonymous. It is said that the success of Chien Yueh, the greatest doctor on children's diseases, was due to a thorough knowledge of this book, which is the earliest special treatise on diseases of infants.
7. The Copper Model. 7 vols. Also anonymous. The first practical handbook on acupuncture.
8. Li Shun: On Carbuncle. 1 vol. An interesting monograph.
9. Royal Infirmary Model Essays. 9 vols. Author unknown. It is a collection of examination papers.
10. Chang Kuo: Medical Miscellany. 10 vols. Contains much that is of interest. Useful for reference.
11. Imperial Cyclopædia of Medicine. 200 vols. Compiled under imperial orders by a staff of medical men. A remarkable work, but unfortunately most of the volumes have been lost.

The distinct features of this dynasty are the inoculation against small-pox which was discovered in 1022, the establishment of medical schools, and the holding of State medical examinations in 1068. Gradually the schools declined and then ceased to exist until 1280 when they were revived by Imperial decrees. State examinations were also discontinued for some time but reintroduced in 1317.

In the Ming Dynasty another change is noticed. The publications became controversial, attacking old writings as well as contemporary literature. Four distinct schools may be recognised. Liu Shou-Cheng propounded the theory that diseases were caused by excessive heat in the body and advocated the use of cooling medicines. Chang Tzu-Ho was famous for his "attacking" policy. He compared diseases to a foreign substance in the system which should be attacked and driven out by drastic drugs such as purgatives, emetics, and diaphoretics. Li Tung-yuan emphasised the importance of the spleen and stomach, and put down the causes of all diseases as due to derangements of the digestive tract. Chu Tan-chi thought that malnutrition was the root of all troubles; hence he extolled the value of tonics. These famous men are called the "Four Great Doctors of the Kin Yuan Period." Later writers, like Sih Lih-cha, Chen Hsiu-yuan, Chang Ching-yo, and others only revolved round the different schools.

Literature.—An important contribution to medical science in the Ming dynasty was the publication of the "Pen Tsao Kang Muh or Synopsis of Ancient Herbals." This is a standard work, compiled by Li Shi-chen, a district magistrate, who was born at Ki-chan, a town in the east of the province of Hupeh. It consists of 52 books and took the author 30 years to complete. All known works on materia medica, to the number of 41, were consulted, while references to 360 medical treatises and 591 other scientific and historical works were freely made. There were 71,096 formulas given in this work and the substances enumerated numbered 1892 kinds. These are arranged in 60 great classes under 16 orders. This treatise is one of the most popular and important books in Chinese medical literature and merits the praise accorded to it by doctors as well as laymen. The "Synopsis of Ancient Herbal" was published in 1590. Another valuable book is Wu Yiu-Ko's "On Plague," which is a special treatise on fevers and epidemic diseases. It contains many original observations and suggestions.

Syphilis.—In some quarters it is declared that syphilis originated from China, but this is not supported by fact. Most Chinese writers of this period maintained that it was unheard of in China till the middle of the sixteenth century and that it was introduced into Canton by Portuguese from India. These statements, though not strictly true, as there are other references recording its presence earlier than this

date, show that syphilis was prevalent in the Ming Dynasty. Indeed, the descriptions of this disease were very accurate and illuminating, and in one interesting monograph written in 1631 the various manifestations and the hereditary transmission of syphilis are mentioned in full detail.

(To be concluded.)

THE LITERATURE OF FOOD INVESTIGATION.

A NEW INDEX.

THE problem of food storage is far older than human civilisation, and was successfully tackled by plants and animals before man appeared on this earth. The density of modern industrial populations has created, however, difficulties in respect of the storage and transport of food which are being overcome only by the application of scientific studies covering wide fields in the domains of chemistry, physics, biology, and engineering. The value of such scientific studies becomes clear when we realise that they alone have made it possible for us in Great Britain to purchase at a reasonable price all the year round a variety of fruits and vegetables, abundance of meat, fish, and dairy produce, including dried and condensed milks, as well as eggs and butter. But the facilities created by such investigations not only enable the urban populations of the home country to enjoy a more varied, and, in certain seasons of the year, more wholesome diet, but they help to create a vast field of enterprise in food-producing countries abroad, and are therefore of fundamental importance to us as an empire which theoretically should be capable of producing and distributing all the food its enormous populations require.

The practical importance of investigations connected even remotely with the principles and methods of food transport and storage was discussed at the Imperial Agricultural Research Conference held in 1927 and it was then decided that a list of publications dealing with such matters should be issued at regular intervals, so that those engaged in any particular branch of the work might be enabled quickly to become acquainted with what has already been accomplished in that sphere. The first of these lists has just been issued under the title of "Index to the Literature of Food Investigation," and it is proposed to continue their publication bi-annually; they are compiled by the Low Temperature Research Station of the Department of Scientific and Industrial Research at Cambridge. The preface to the present number contains a brief account of the development of modern knowledge concerning cold storage, and illustrates the necessity of detailed investigations of a vast number of points in connexion with every variety of food product. For example, egg-yolk frozen without any particular regard to the temperature conditions may undergo an irreversible change which causes it to turn into an unpalatable pasty mass; this change does not take place at temperatures above -6° C., which is therefore to be regarded as a critical temperature for egg-yolk. Critical temperatures have been found for other food substances and are of obvious commercial importance since they define the limits within which foods can be chilled. Again, it has become clear that fruits under storage conditions must be regarded as living tissues which are continuously respiring and therefore altering the percentages of oxygen and carbon dioxide in the enclosed space which they occupy; the latter factors, in conjunction with the temperature, in turn influence their rate of ripening and their liability to disease. These two examples may help to illustrate the complexity of the problems that have to be studied to ensure the delivery to the customer of food in first-class condition. This issue of the index contains references to some 700 papers, most of which have appeared during the last two years, and a brief outline of the scope of each paper is appended below the title. One of the largest sections into which the subject-matter is divided is concerned with dairy produce, and some idea of the comprehensiveness of the investigations reviewed may be obtained by noting the subjects included under this heading—namely, heat treatment and cold storage, dehydration and canning, the bacteriology of putrefaction, and methods of analysis, with subsections dealing with patent specifications. Cheese-making and butter-making are considered from various aspects which include modern methods of manufacture and studies of the conditions affecting the qualities of the final products.

It is clear that a periodical of this kind will prove of value, not only to those engaged in the production, transport, and storage of food, but also to those interested in the study of human and animal nutrition, whether from the practical or from the scientific standpoint. Copies of the index (the price of which is two shillings) may be obtained from the usual agents of H.M. Stationery Office; special arrangements have been made for its sale in the United States at the British Library of Information, French Buildings, 5, East 45th.-street, New York.

OCCUPATIONAL CANCER IN COTTON WORKERS.

AN address on cancer in relation to occupation was given to a conference of Trade Union Approved Societies in Manchester, on July 16th, by Dr. S. A. Henry. He pointed out that certain classes of skin epithelioma may now be regarded definitely as occupational in origin. So far as it affected mule-spinners, the spray of mineral oil reaching the clothing of the worker was the cause in the majority of cases. The Factory Department of the Home Office had now record of 869 cases of epithelioma of the skin in cotton mule spinners; 714 (82·2 per cent.) in those who were employed as spinners when the disease was recognised, 33 (3·8 per cent.) in those who had retired from work from one to sixteen years previously, and 122 (14·0 per cent.) in ex-spinners who had passed into other occupations for periods varying from a few months to thirty years. Cotton mule spinning was sixth in the list of the occupations with the highest comparative mortality figure from all forms of cancer. The earliest age at which the disease had been recognised was 22, and the latest 77. Of the persons affected, only 1 per cent. were under 30 years of age, and 4·2 per cent were under 35 years of age. The disease did not usually occur until the person afflicted had been employed in the mule room for some considerable time. In 1911, deaths from scrotal epithelioma in mule spinners made up 9 per cent. of the number of deaths from this cause in England and Wales, in 1924 they made up 40·3 per cent. Dr. Henry also dealt with the use of various types of mineral oil, and cited Dr. Twort's recent experiments in Manchester, which showed that of all samples of oil he had examined, shale was the most likely to produce cancer. Further research into occupational cancer of the skin was urgently needed.

OBJECTIONABLE ANAEROBIOSIS.

MANY experiments on micro-organisms are conducted under anaerobic conditions, or, at least, conditions which are believed to be such. The essential sought is complete absence of oxygen, and, incidentally, of all active gases. As a counsel of perfection the use of argon might well be advised, but this does not seem to be done. In the current issue of the *Biochemical Journal* Mr. H. Nicol calls attention to a well-known but little heeded objection to the use of alkaline pyrogallol as a means of removing oxygen. The evolution of carbon monoxide when oxygen is absorbed by this reagent has long been known to occur, although the proportion formed can be kept down to amounts which are negligible for purposes of gas analysis by proper precautions. In bacteriological work it is not easy to observe these precautions, and in any case small traces of carbon monoxide may have a toxic effect on the organisms experimented with or possibly may serve as a source of oxygen. It is not of course difficult to free nitrogen from carbon monoxide, but this means the introduction of the gas into the apparatus containing the culture, and is more troublesome than the usual plan of absorption in situ. The use of oil on the surface of a liquid medium is not effective, for oils absorb oxygen from the air and allow it to pass downward to the liquid beneath.

A NEW POCKET ELECTRIC AURISCOPE.

AN auriscope which carries its own illumination and is suitable for the waistcoat pocket has been put on the market by Messrs. John Smith and Son, of Glasgow, at 32*s.* 6*d.*, who claim that it is British made throughout. The design is that of a small "fountain-pen" type of electric torch, with a dry battery in the handle; the usual bulb and reflector are removed, and a special adapter fitted, into which the auriscope plugs. This is provided with a detachable speculum, different sizes of which can be supplied and would be necessary in practice. The lens is removable, to permit of working through the speculum, and there is a second smaller lens on a swinging arm which can be brought into position without interfering with the use of a probe or paracentesis knife. The apparatus is well made and convenient for use at the bedside. It has a fault which is common to many of these instruments. The lenses focus an object at the tip of the speculum and give good definition at this level; but when the patient is being examined the membrana tympani lies about half an inch beyond the tip of the speculum and is decidedly out of focus. This defect should be remedied by an alteration of the focal length of both lenses.

INDEX TO "THE LANCET," VOL. I., 1929.

THE Index and Title-page to Vol. I., 1929, which was completed with the issue of June 29th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.